

Columbia University

in the City of New York School of Dental and Oral Surgery



Reference Library





THE

Ohio Dental Journal

EDITED BY

L. P. BETHEL, M. D., D. D. S., KENT, OHIO.

VOL. XXI.

PUBLISHED MONTHLY BY

THE RANSOM & RANDOLPH CO., TOLEDO, OHIO.

PRESS OF
THE FRANKLIN PRINTING AND ENGRAVING CO.
TOLEDO, OHIO.

INDEX TO VOL. XXI.

A	Page
Page	Bridge Repair
Abscess—Indurated 49	Bridge-Sectional
Abscess—How to Arrest	Bridge-A Saddle Becomes Filthy 402
Abscess-Valuable New Device to Relieve. 541	Bridge-Anchorage of 405
Acid-Suggestions on Use of Sulphuric 247	Bridge-To Re-cement Without Removal., 406
Address-President'sL. L. Barber 27	Bridge-Work-Method of Attaching
Address-President'sG. V. Black 469	
Alcohol-Use of After Sulphuric Acid 47	Bridge-WorkA. W. McCandless. 342
Alcohol-Action of on Metals 283	Broaches-To Make Smaller 150
Alloys-Wash Before Using 195	Burs and Corundum Wheels-To Clean 583
Aluminum Plate Not Compatible with Gold	Date that Contractant in Book 12 of Contractant Con
Filling	C
Amalgam-New Method of Using 106	
Amalgam	Canker Sores-To Cure 243
Anesthesia—Continued with Nitrous Oxid.	Carbolic Acid-Antidote for 446
	Case—AJ. Taft. 88
Anesthetics—Use and Abuse of	Case in Practice
P. J. Woolsey 113	Cavity-Formation of in Molars and Bi-
Anesthetics—Safe Administration of	cuspids
E. G. Smith 533	Caries of the Teeth-Treatment of 100
Annealing Tin	Caustic-Painless 444
Antrum—Infection from Crowded Bicuspid.	Cement-Kowarska's 246
	Cement Instead of Gold
Antrum—Tuning Fork to Diagnose Dis-	Cement-To Remove Excess in Setting
eases of	CrownsS. D. Ruggles, 425
Appliances—New	Cement-Paraform 444
Appliances—New	Cement for Mounting Crowns and Bridges, 537
Arsenic in a Tooth-Effective Method of	Checking of Teeth in Bridge-Work-To
SealingA. L. Blackburn. 557	Avoid 539
Arsenous Acid—Caution in the Use of	Children-Management of 151
E. Touvet-Fanton, 581	Chloretone-Local Effects of H. M. Clapp. 278
Articulation and Occlusion of Teeth 247	Chloretone-Bad Results from Use of
Articulation-Method of Restoration	F. B. Clemmer. 334
	Chloroform-Antidote for Poisoning of 401
Articulation and Occlusion 540	Clamps-Adjusting to Conical Teeth 431
Assistant—Laboratory	Clinic—Abuse of the
Azymol 284	Compressed Air in Dentistry
В	Continuous Gum WorkL. P. Haskell. 26
В	Compound—A Superior Moulding 401
Backings-Attaching J. H. Judd. 583	Cocain Antagonism 284
Bad Effects of Premature Extraction of the	Cocain—Antidote for 402
Deciduous TeethC. B. Blackmarr. 589	Contour with Reference to Mucous Mem-
Bite-Correct Method of Taking a	brane
Morley Braddon. 582	Crown—Temporary 538
Bleaching	Crown—Open-face
Bleaching Agents-Study ofN. S. Hoff. 463	Crown-How to Make, a Seamless Gold 545
BoxingsG. S. Allen 143	Crown-Method of Making Accurately
Bridge Attachments-Concealed Gold	Fitting 398
H. M. Kirk 79	Crown-A Hint on Making a Porcelain 403

Page	Page
Crown-To Keep Root Dry While Setting. 404	Dentine—Sensitive 101
Crown-An Emergency 407	Dentist-The SuccessfulE. H. Raymond. 44
Crown-Work-PorcelainH. J. Goslee. 416	Dentists-Ohio
Crown-Work-Gold and Platinum for 445	Dentition-Lotion for Painful 284
Crown-Work-Porcelain as an Art in	Dentistry in the Public Schools-Report of 98
F. J. Capon 409	Dentistry-Difficulties of Practicing
Crown-Bell Shaped for Untrimmed Tooth. 449	W. H. Whitslar 161
Crown and Bridge-Work-Modern Methods	Dentures-Weighing Lower
in	Denture-To Reduce Weight of Full 151
Crown and Bridge-Work-Carmichael Sys-	Dentures-Short Cusped Teeth for 244
tem of	Dentures—Refitting
Grown—Banded LoganW. H. Gensley. 93	Dentures—Cause of Faulty Articulation of. 298
Crown-Setting of LoganJ. E. Boyd. 93	Dentures—To Refit
Crown for Badly Decayed Bicuspid	Dentures - Adaption of A. O. Hunt. 576
	Dentures and their Retention—Partial
Crown—Shaping Model for	
	Diagnosis-MistakenH. H. Harrison. 82
Crown—Cementing	Dies—Method of MakingG. A. Comte 135
Crown and Bridge-Work-Method for	Dies—The Ideal
Constant Setting	Discrimination
Crown Setting	Disinfectant—A Superior
Crown—Banded LoganE. C. Abbott. 191	
Crown-Making a Seamless J. H. Prothero. 189	Drill—A Good Spear
Crown and Bridge Work-Abutments for	Dummies—A New Method of Making
Removable	J. K. Smith. 95
Crown-Device for Obtaining Accurate	E
Collar 245	
Crown and Bridge-Work-Backing Facings	Editing—Perfect(?)301
for	Enamel-Removal of, Without Pain 403
Crown—A Short Bite	Epilepsy-Dental Aspect of. H. C. Brown. 86
Crown—Resetting Without Removing Pivot 291	Etiology, Physiology, etc., Report on
Crown—Amalgam Joint in Fitting a 335	J. D. Patterson. 471
Crown-Inter-Dental BandE. W. Paul. 338	Eucalypto-Percha
Crown—The Collar	Europhene for Root Filling. S. M. Weaver. 115
Crown-Carved Cusp for Gold. J. E. Nyman. 427	Evolution in Dental Science. S. B. Palmer. 228
Crown-To Make a Richmond with Soldered	Extension for PreventionC. M. Wright. 122
Gold Filling H. A. Moyer, 553	Extract—Do Not Last Tooth 245
Crowns-A Few Ideas onJ. Mountford. 234	Extraction-To Minimize Pain in 194
Crowns—Reinforcing Occlusal Surfaces of. 287	Extraction of Deciduous Teeth 195
Crowns—Treatment of Broken-down 296	Extraction-Pyemia Following 288
Crowns and Bridges-Gutta Percha for	_
Setting	F
Crowns—Banded are Strongest 405	Facings-Solderless Attachment of 447
Crowns-Porcelain	Federation—International Dental
Crowns-Fitting Porcelain. A. P. Burkhart. 432	Files—To Remove Vulcanite from 28
Crowns-Method of Making Open Faced	Filling Materials—Combination of
P. B. Bain. 532	O. E. Inglis 43
Crowns-Making of Temporary 540	Filling Material—Gold and Tin as a
Crowns-Care in Setting W. H. Neall. 582	
Cuspidors—Care of	J. R. Callahan 95
	Filling—Gold and Felt Foil. L. T. Canfield. 97
D	Filling—Pure Gold Plate Used for 15:
	Filling—Best Material for. R. A. Dinsmore. 16
Decay-Finding ofGarrett Newkirk. 534	Filling-How I Insert an Amalgam
Degrees—American in Germany	T. F. Chupein. 281
Dental Don'ts-A Few F. H. Metcalf. 587	Fillings-Gold with Smooth Pluggers
Dental Instruments-Disinfection of	J. B. Beauman. 96
	Fillings—Contour with Soft Foil
Dental Profession-No Such Thing as New. 343	G. S. Junkermann. 9:
Dentine-Decalcified 47	Fillings-Easy Removal of Amalgam242, 29.

Page	Page
Fillings-AmalgamL. L. Sheffield 270	Hot-air-Do not Use for Drying Root Canals
Fillings-Why Amalgam Fail 287	
Fillings-Root-Canal290-294	How to Crown an Incisor Root Outstanding
Fillings-How to Retain Gold Color in Tin	from Normal AlignmentJohn Girdwood. 588
and Gold 404	
Fillings-Amalgam and Gold at Same Sit-	I
tingJ. W. Clark. 426	Interstitial Gingivitis—Treatment of 153
Fillings of Improved Tin Foil	Impression for Lower Denture
H. L. Ambler. 427	Impression—Bromidin to Prevent Gagging
Flasks—Closing of	When Taking
Flux—A Fluid That Does Not Pit 195	Instruments-Sterilization of
Forceps-Removable Beaks for	H. C. Boenning, 36
C. V. Vignes, 483	Instruments-Separating and Finishing 151
Foreign Relations Committee—Report of., 487	Instruments-Sterilization of
Formalin Solutions—How to Prepare 289 Formalin in Glycerine	Inlay-Attachment forJ. P. Carmichael. 183
Fusible Metal in Articulating Models	Inlay-PorcelainD. W. Clancey. 92
	Inlay—Anchorage of
The state of the s	Inlay-Chamois for Taking
G	Inlay-To Overcome Staining from Copper
Carriella and Adirecting in Duties	Disk
Germicides and Antiseptics in Dentistry	Inlay—How to Color an
Gingivitis—InterstitialE. S. Talbot. 149	Inlay—Suggestion on Making
Gold-Non-cohesive and Tin. J. R. Callahan. 39	Inlay—Retentive Device for
Gold—To Make Cohere Under All Condi-	Inlay—Poreclain by Water Bag Method I. N. Broomell. 339
tions 198	Inlay—High Fusing Porcelain and Cast
Gold Blindness	GoldP. A. Michel. 345
Gold-Adapting Pad to Cervical Border	Inlay—PorcelainE. E. Reese. 425
F. W. Stephan, 483	Inlay—Etching of Porcelain
Gold-A New MatJ. B. Vernon. 485	Inlay—How to Handle an
Gold Tips-Burnished Otto J. Fruth. 583	Interproximal Space—TheG. N. Wasser. 209
Guard-Metallic for Engine Disks and	Investment Material-An Excellent 448
WheelsF. F. Hoyer, 486	Iodoform-To Remove Odor of from Hands 194
Gum Reproduction in Proximal Spaces	
G. T. Carpenter. 41	J
Gum Tissue—To Get Rid of	Jack-Screw—A Useful
of	Jaw-Splint for Fractured.H. R. Harbison. 136
Gum Work—To Repair Continuous	Joints—DarkJ. B. Hodgkin, 580
D. J. M'Millan. 580	loints—To Remove Stains from Dark 99
Gums-Treatment of Irritated and Lacer-	John S. L. Lines C. L.
ated 48	L
GumsTreatment of Suppurating 48	200
Gums-Treatment of Thickened 152	Laboratory Bench Dressing
	Leaky Vulcanizers
Н	Ligating Teeth—Care Necessary in 404 Local Anæsthetic for InjectionT. J. Jones. 582
Hands-Disinfection of	Logan Crowns in Metal Plate Work—A
Hemophilia 294	Method of Using
Hemorrhage-Unusual Case of C. A. Clark. 43	Lysoform
Hemorrhage—To Check After Extracting. 195	
Hemorrhage—Suprarenal Capsules for 447	M
Hemostatic—Suprarenal Capsules for	Malian I. What Was Cas W. Day
Hemostatic Solution	Mankind—In What Way Can We Best
Hints—PracticalMark Hayter. 260	Serve
Hints-PracticalS. D. Ruggles. 555	Matrix—Use of in Filling Broken Down
Hints—Two Good	Teeth
Honesty-Professional	Matrix and Pad—TheF. W. Stephan. 554

Page	Page
Matrix in Position-To Tie a	Plates-Polishing Aluminum
E. K. Wedelstaedt. 584	Plates-How to Make Satisfactory Lower 352
Maxillae-Phosphor Necrosis of	Plates—Adaptation ofE. J. Perry. 396
O. S. Heinemann. 215	Plates-To Remove Teeth from Rubber 403
Maxillary Sinus-Diagnosis and Treatment	Plates-A New Metal for Cast
of Empyema of theW. H. G. Logan. 512	R. C. Brophy. 481
Medication—Preventive 100	Porcelain Facings-Repair of Broken 49
Medicine-DentalM. E. Le Galley. 474	Porcelain Roots for Implanted Teeth 145
Medicinal or MechanicalW. D. Cowan. 240	Porcelain as an Art in Crown-Work
Mercuric Chlorid-Use of	F. J. Capon. 409
Metals-Method of Recovering Noble 276	Points-Gutta-Percha 102
Metric System at a Glance	Points-Three that have been Helpful
Minor Surgery-Practical Suggestions in	G. A. Kennedy 510
H. D. Hatch. 590	Pointers-A Few LittleS. J. Spense. 428
Models-To Prevent Warpage of Plaster 196	Porcelain-Cause of Cracking 544
ModelsE. C. Moore. 273	Pliers-Contouring
Models-Duplicating Plaster 538	Prosthetic DentistryG. H. Wilson. 169
Molars-Some Thoughts Anent	Protargol for Abscessed Teeth 196
H. L. King. 118	Pulp-Fungoid
Molars-Impacted ThirdF. Freymann. 134	Pulp-Death of Under Crowns 99
	Pulp Removal-Soreness During 150
N	Pulp Digester-Papain for
	Pulp—Hyperemia of
Napkins-Old and NewB. G. Simmons. 324	Pulp-Pulp Chamber Paste for Exposed
Neurasthenia-DentalW. H. Whitslar. 313	
Neurosis-Some Chemical Aspects of	Pulp-Digestion 288
J. S. Cassidy. 1	Pulp Protector
Neurology-DentalW. H. Whitslar. 12	Pulp-Circumscribed Inflammation of 353
Necrosis-A Case ofC. N. Gibbons. 333	Pyorrhea Alveolaris-Chloretone for 47
Neuralgia-A Word About 99	Pyorrnea Alveolaris—Treatment to Arrest.
National Meetings	
Nitrate of Silver Fibre	Pyorrhea Alveolaris-Mouth-Wash for 301
Nitrous Oxide and Oxygen as an Anæs-	Pyorrhea Alveolaris
thetic	Tyonnea mycolans
0	R
Obituary—J. E. Robie 56	RecreationE. C. Beggs. 219
Obituary—A. C. Cogswell	Regulating Bands-Shellac
Obituary—T. F. Chupein	Relief . Spaces 103
Obituary—H. J. McKellops 305	Reminiscences of Pioneers in Dentistry
Obituary—W. H. Morgan 306	J. Taft. 369
Obituary-C. E. Esterly 548	Retaining Appliances for Lower Teeth
Occlusion of TeethL. P. Haskell. 556	
Oral Sepsis-Toxic Effects of W. Hunter. 231	Root-Canals-Leave Temporary Unfilled 99
	Root-Canals-Scientific Filling of 101
P	Root-Canals-Aqua Regia in Treatment of. 152
	Root-Canals-Treatment of in Deciduous
Paste-Kowarsko's 102	Teeth
Paste-Mummifying	Root-Canals-Treatment of Restricted 280
Pathology in Dental Practice. G. W. Cook. 457	
	Root-Canals-Lost Continuity of
Pericementitis	Root-Canals—Lost Continuity of
Pericementitis	
Plaster—Impression 444	O. E. Inglis. 436
	Root-Canals—Filling with Gold
Plaster—Impression 444 Plaster Casts—How to Harden	O. E. Inglis. 436 Root-Canals—Filling with Gold I. Douglas. 485
Plaster—Impression	O. E. Inglis 436 Root-Canals—Filling with Gold I. Douglas 485 Root-Canals—Treatment of
Plaster—Impression	O. E. Inglis 436 Root-Canals—Filling with Gold I. Douglas 485 Root-Canals—Treatment of

S Page	Page
Saliva a Protection against CariesA. Michel. 586	Tooth-pick—Antiseptic Floss
Saw Blades Piercing 48	Tooth-pick-Floss SilkJ. W. Cowan. 485
Sarcoma-Cases in PracticeM. C. Smith. 264	Tooth-wash for Chlorotic Patients 402
Scalers-New Forms ofC. R. Butler. 426	Treatment, by Crowning, of a Root in which
Separation of Teeth Without Pain 445	a Post has been Fractured. John Girdwood 58
Separating Fluid	Tri-State Dental Meeting 358
Sketch-G. W. KeelyC. M. Wright. 327	Tube Post-Uses of theJohn Girdwood. 592
Soapstone 446	
Sodium Peroxid	U
Solder-Gold	Unsoldering-To PreventH. J. Goslee. 58.
Soldering-Phosphoric Acid for Hard 47	
Soldering on Asbestos Wig 106	v
Soldering-Hints on	· ·
Soldering To Prevent Bubbling in 402	Vacuum Cavities-A Criticism
Soldering Made EasyH. W. Northrup. 527	L. P. Haskell. 117
Soldering-Plate-Work 539	Vaseline as a Separating Medium 47
Solutions-Normal	Vaselin as a Plaster Separator J. H. Judd. 581
Sterilization of Teeth to Arrest Decay	Vulcanite Trimmer
	Vulcanizing on Plaster Models 537
Stomatitis-ArsenicalH. C. Kenyon. 265	***
Swedging Machine-Parker'sB. H. Lee. 484	W
Swedging Apparatus-Sandvig's	Wax from Teeth—To Remove58
L. Ottesen. 484	Wheels-To True Lathe and Engine 425
Syphilitic Manifestations in the Mouth	Why and Wherefore?L. P. Haskell. 269
F. M. Casto. 505	
Syringe Filling Hypodermic 47	X
Syringe—Suggestions on Use of 102	
_	X-Rays-Obscure Dental Troubles Diag-
T	nosed by248
Tactile Impressions—To Quicken	NEW PUBLICATIONS.
Tannocresoform	Principles and Practice of Filling Teeth
Teeth-Typal Contact of Natural	
L. P. Leonard, 193	A Practical Treatise on Crown and Bridge
Teeth-Cause of Eye Affections 196	WorkGeo. Evans. 50
Teeth-African	American Text-Book of Operative Den-
Teeth-Unique Method of Tightening	tistryE. C. Kirk. 51
Lower FrontD. D. Smith. 279	Treatment of Malocclusion of the Teeth
Teeth-To Prevent Loosening of Porcelain. 285	E. H. Angle. 51
Teeth—Use of Tube	Practical Treatise of Materia Medica
Teeth-To Remove Discoloration from Por-	Dontal Floatsicity J. F. Custon 200
celain	Dental ElectricityL. E. Custer. 303
Teeth—To Preserve Characteristics of 295	Oral Pathology and Practice
Teeth-Critical Periods in History of Hu-	Self-Examination of Medical Students 357
man	Oral SurgeryS. L. McCurdy. 502
Teeth-Attachment of Implanted	Interrogations in Dental Metallurgy
W. C. Barrett. 515	J. H. Beal. 503
Teeth—Separating the	Dental MedicineF. J. S. Gorgas. 503
Teeth-Device for Holding Securely in	Demai Medicinetinininininininininininininininininin
Vulcanite Plates	CORRESPONDENCE249-590
Tissues of the Mouth—Some Troubles of	
Soft	SOCIETY
Tooth—Carious in Dermoid Cyst	53156 -205 -249 -308357453504549599
Toothaches Neuralgia To Stop 196	00 100 200 210 000 001 100 001 040 39
Toothache—Neuralgic—To Stop	
	AFTERMATH-
Toothache—Swedish Drops for	AFTERMATH— 54 157 207 310 359 408 454 552 -59



OHIO DENTAL JOURNAL.

VOL. XXI.

JANUARY, 1901.

No. 1.

CONTRIBUTIONS.

SOME CHEMICAL ASPECTS OF NEUROSIS.

BY J. S. CASSIDY, M. D., D. D. S., COVINGTON, KY.

When chemistry, directed by human intelligence, lays its relentless nand on organized structure, for purposes of analysis, the identity of that structure is forever lost.

To prove the truth of this statement we need go no further than the vestibule of dental science, and select a tooth as a simple example for investigation. In building up this simple organ, vitality governed the selective affinities of the nutrient radicals, with as much care as it does in the formation of any other tissue; and when this organ parts from the source of life, it still retains the impress of the vital force; it is still organized. We can agree with Buzelius and others, that the constituent materials of this tooth as a whole consist of 28 per cent of so-called organic substance, and 72 per cent of calcium phosphate and other so-called inorganic salts. But in order to ascertain these results of analysis, the complete distinction of the tooth itself must precede the determination of the fact.

The chemist may tell in advance the effect, if any, on a given

^{*}Read before the Ohio State Dental Society, December, 1900.

substance, by, for instance, prussic acid; no one, however, so far as I know, can detect the immediate chemical reactions that possibly occur, when this acid is introduced into the animal body.

Realizing that, although the laws of chemistry are not violated by vitality, the vital force says to man, with his tests, tubes and reagents, "Hands off; thus far you may go, but no farther;" is it any wonder, therefore, that the present writer hesitated, with fear and trembling, the order to obey the command of your indefatigable executive chairman, to write a paper for this meeting, on such a stupendous subject as the "Chemical Aspects of Neurosis"?

Taking it for granted that we understand, more or less, the general anatomy and physiology of the nervous system, we need not devote any time to their consideration; two or three explanations, however, will not be out of place.

A psychosis is a morbid mental state. This includes various conditions, such as insanity, idiocy, imbecility, mental irritability, depression, emotional excitement, morbid fears, volitional weakness, lack of self-control, weakness of memory, and a tendency to hypnotic and somnombulistic states; also certain cerebral symptoms, as stupor, coma, and some forms of headache.

Neurosis is a morbid nervous state; not restricted, however, to morbid nervous state of functional character. A combination of mental and nervous symptoms form psycho-neurosis, and all of these may be both, or either, subjective or objective.*

The chemistry of cell metabolism, constructive and destructive, is now, and, in the nature of the case, probably always will be, beyond the reach of satisfactory direct human examination; but animal and vegetable chemistry has not been restricted in the successful investigation of the nature of the secretory and excretory products, and of the proximate principles of the various tissues. Much has been accomplished in this direction that is suggestive of further interesting developments, and a still deeper insight into the more complex molecules. The proteids, for example, which form the chief part of the solid portion of blood, muscles, nerves, glands and other organs, and which animals obtain direct from the vegetable kingdom, are composed approx-

^{*}Dana.

imately of C144 H224 N36 O44 S2; some also contain phosphorus. Proteids, when heated to a temperature of 150° C., give off relative quantities of NH3 and CO2, corresponding exactly with those obtained by resolution of urea, CO (NH2)2, into ammonia and carbon dioxid.*

This fact tends to show that albumen is a complex ureid containing one-fifth of its N in the form of urea, a substance metameric with ammonium cyanate (NH4 CNO). On the other hand, it is believed by some late authorities that proteids are built up by a series of cyanic alcohols, embodied on a benzene nucleus.†

May it not be possible, that inasmuch as N, when present as a constituent of organic compounds, enters the combination with two units less than its normal valency, and therefore induces some influence on the retorgrade metamorphosis of proteids; and the development of leucomains in health, and ptomains in disens, and also the rapid action of alkoloids in general when taken into the body?

By average results of various experiments, it has been found that the proportion of CO2 exhaled to the O inhaled, is much greater in the day, than in the night; with perfect rest day and night, twice as much, with active motion during the day, three times as much. The amount of O taken in during rest by day in only half as much as is taken in at night, and after active motion during the day, the amount of O taken at night is still more. In fevers the amount of CO2 exhaled, proportional to the amount of O inhaled is much greater than in health; but in diabetis, the proportion of CO2 exhaled by day to the O inhaled is less than in health, and at night the amount of O inhaled may be less than half the quantity required in a state of health. In leucomia, the proportion of CO2 exhaled to O inhaled by day, was much less than in health, and the amount of O taken at night was even less than is taken in during the day.

These facts, obtained through governmental patronage, prove at least that O is stored up in the body during periods of rest, and that this O of reserve is frequently supplemented by the

^{*}Fowne.

[†]Kirke.

constitutional O of the tissues, and also that the relative amount of O inhaled plays a most important part in the rise and fall of animal vitality.

Nervous tissues are alkaline in reaction, but become acid by active work, the acidity is due to lactic acid (C3H6O3), and some uric acid (C5H4N4O3), greater in the gray matter than elsewhere.*

Of the inorganic constituents of the brain, aside from water, those of phosphorus are the most abundant, those of potassium next.†

Proteids make up a little more than one-half the solids in gray matter, one-fourth those in white matter, and one-third those in nerves. The gray matter contains twice a much phosphorus as the white, while the white matter contains 52 per cent. of the monatomic alcohol cholesterin and fat, and the gray matter only 18½ per cent.

Cerebrin (C17H33NO3) is found largely in the brain (cerebrum), and licithin (C42H84NPO9), although occurring especially in the cranial nerves, is widely diffused in the animal oraanism. These two compounds form the so-called "protogon," which is the chief substance in the nerve centers and periphery.

Now as neurosis are involved in pretty much all forms of disease, it is plainly impossible to take up more than a few salient points, here and there, such as might seem to agree with the subject imposed on your program.

Palpitation of the heart may be one of these, a symptom produced by various causes, reflex and direct. The heart itself is said to be a muscle, but with Whittaker we may ask, "what is muscular tissue anyhow but the terminal expansion of nerve fibre?"

One of the most frequent causes of palpitation of the heart are the chemical causes, at the head of which stands poisoning by nicotine. (Tea, coffee and alcohol are also in this chemical class.) Tobacco smokers form a large contingent of cases of heart neurosis. What chemical action necotine performs in the body is unknown, but it is known that when disturbance shall

^{*}Dana.

[†]Leoghegan.

have once occurred as a result of the excessive use of tobacco, even a moderate use will suffice to keep it up.*

Although the baneful influence of nicotine is conceded as a prolific chemical cause of cardiac neurosis, the well marked injury to the whole nervous system observed in the chronic condition of persistent cigarette fiends must be attributed to other chemical reactions than are due to this alkaloid. The conclusions reached by Dudley after careful experiments in this direction, with lower animals, are that nicotine plays only a subordinate part in producing the evils concomitant with the habit. He says it is the absorption into the blood of CO which causes the greater injury. As is known CO2 is one of the products of the combustion of tabacco. CO2 formed at the burning end of the cigarette instead of escaping into the air, is drawn back into contact with the heated carbon, and there suffers reduction, according to the equation.

CO2+C=2CO.

CO is a gas slightly lighter than air, colorless, tasteless, and without odor. It is an unsatisfied dyad radical, anxious for more O, with which it takes up readily, when permitted. It is the insidious poison that escapes through the heated cast iron of our stoves and furnaces, into the atmosphere of our rooms, and there, whether in palace or cabin, even in the relatively small quantity of one part, to ten thousand of air, exerts its silent influence against the health of unsuspecting people, inducing serious neurosis, such as heart palpitation, headache, loss of appetite, anæmia, and systemic ennervation, particularly at the close of a long, cold winter.

When this poison is taken into the lungs by inhalation, in company with the smoke of the cigarette, it enters the circulation and attacks the red corpuscles, causing them to part with their haemoglobin, much like the physical effect on them, produced by chloroform, but in this case appropriating the oxygen; and in so doing exerting a stimulating effect, followed by mutual and physical depression; a true psycho-neurosis.

Some of the paper wrappers of cigarettes have been found to contain arsenic. This drug of itself might cause neurosis.

^{*}Whittaker.

While the immediate chemical action on tissue in rapid poisoning by arsenic is not fully determined, chronic poisoning by arsenic, however, shows a wholesale destruction of proteids, and fatty degeneration; even if the arsenic took away only the sulphur of the proteids, the latter would, of course, be totally destroyed.

Alcohol, like CO, is a combustible, and being so, in the animal body as elsewhere, it seeks and finds oxygen. The O of reserve in the body is called upon, and willingly responds; if excess of alcohol is present the O of the proteids, rather than that of the etheral salts, is also called upon for the alcoholic equivalent. Thus, both the principal and interest of the investment are used to support the chemical riots in the body of the victim, temperature, mental and physical power are diminished by the protean waste, in undue proportion to the temporary exaltation of the early stages of indulgence. The various neurosis caused by alcoholism are too well known to justify mentioning here, but it is safe to say that if the habit be persisted in to the point of over indulgence, bankruptcy of the whole nervous system is only a question of time.

A person in a state of health, free from bad habits and untoward circumstances, will furnish saliva usually alkaline. This alkalinity increases during and after eating, and decreases by experimental fasting; the writer thinks he has observed that fasting enforced by lack of appetite through excessive grief, is accompanied by increase in the alkalinity of saliva, due, probably, to the extra development of ammonia from the proteids, and its combination with carbonic acid. Circumstances, however, may change this alkaline condition to a decided acid tendency, as is found with such diseases as catarrh of the intestinal tract, diabetis, and acute rheumatism. Saliva may show a local acid reaction, caused by fermentation of food debris in the mouth, although at the same time it may be secreted alkaline. Whenever it comes acid from the ducts, we may presume on the existence of some neurosis, and in either case bacterial influence may be considered necessary. In the opinion of the writer, bacterial influence is not independent to that exerted by the vital force, and that chemical changes in the mouth, as elsewhere in the body, are undoubtedly governed by the rise and fall in the regulating power

of the life principle; in other words, the presence of what is regarded as a purely local disease of whatever kind, in the mouth, or elsewhere in the body, is owing to a combination of both local and systemic phenomena.

We have all seen, not infrequently, caries of the teeth, after progressing rapidly for a time, completely arrested, and immunity from further progress continued for many years, although at the same time the local environment may appear as in every way a most inviting trysting place for prolific and continuous devolopment of bacterial ferments. On the other hand, we often observe that caries proceed rapidly in otherwise healthy and cleanly mouths. While these reversed conditions are not by any means the rule, they occur among all classes of people of every age, so frequently as to show to the minds of not a few, that dental caries is a disease consequent on some neurosis that permits the local play of chemical affinities more or less destructive to the teeth at certain periods. Has nature so impressed itself upon these organs, in pairs, right and left, that simultaneous decay occurs on corresponding surfaces during the same space of time, leaving their immediate neighbors unaffected, although surrounded, apparently, by similar extraneous conditions? An answer affirmative to this question is not contrary to the facts obtained by clinical observation.

Of late years, leading writers in our profession assume the belief that structural perfection, or imperfection, density, hardness, or relative softness, in enamel or dentin, have little, perhaps nothing, to do in either resisting, or submitting to, the action of those local agencies to whose power the existence of dental disease is supposed to be attributed. Can it be that the influences for either good or evil, which induce these opposite phenomena, are the result of odic, nervous, or electrolytic force, or whatever combination of forces it may be called, pertaining to, and following the lines of some periodic rule involved in the local issue?

It is not sufficiently satisfying to be told what everybody knows, because told so often, that heredity, that vague, indefinite impression for the past, recent and remote, is a recognized factor in influencing immunity from, or encouraging susceptability to certain diseases.

A state of health should not alone consist in the mere absence of disease, and as there are recognized odors peculiar to many diseases, so also there ought to be a positive tangible evidence, belonging to, and emenating from the healthy body, which our olfactory nerves are not as yet capable of detecting, but which, it seems, our dogs easily identify hours after our bodies have passed on the trail.

Will chemistry some day be able to isolate this mysterious material principle of health? "Quen Sabe."

With these thoughts in view, not as well expressed as they should have been, but nevertheless too real to be classed as mere theories, it is not perhaps presuming too much to say, that in connection with local cleanliness as an adjuvans, regular systemic treatment in each case will enter as the largest item in the future story of dental prophylatic therapeutics.

DISCUSSION.

DR. W. A. PRICE: I want to congratulate the Society on having such a paper read before it; it is the foundation of all that we can build upon in dentistry. Just as histology is to minute anatomy, so chemistry is to minute physiology.

The paper is too extensive for a proper, comprehensive discussion on such short notice; I have, therefore, no direct criticisms to make, but simply two points to mention in brief.

The first is the great importance of our appreciating the relation of the constitutional conditions to these changes which take place in the teeth. And if we are to understand and appreciate this, it follows that we must know the chemistry and physiological chemistry of all the organs of the body. The other point, the saliva, if acid as secreted by the duct, invariably indicates a neurosis. That is fairly well established. If we can conclude always that the patient is suffering from some form of neurosis, when such conditions exist, by that simple diagnosis, we have the key to a cure, which, to my mind, is just as important to the patient

as the stopping of a cavity. The question then comes up, Cannot that neurosis be cured by constitutional treatment? Cannot the future dentist, by the study of physiological chemistry, by laboratory experimentation, develop to such a point that he will have a course of treatment for such patients, so that neurosis can be treated through the system, and thus re-establish the natural alkalinity of the mouth, and not only by the stopping up of cavities of the teeth and by various mouth washes?

DR. H. T. SMITH: While I have very little to say, it gives me an opportunity of congratulating the Society on having such an excellent paper presented to it. Among all the other papers, there will be hardly any, I think, to compare with it, and it will bear the careful study of all dentists. A development of the theories presented by Dr. Cassidy will certainly have a great effect upon the practice of dentists, and the treatments which they put into practice and recommend to the patients.

The development of physiological chemistry is one which is of recent origin; it is noticed in the recent establishment of such laboratories at Harvard, and even in our own city for the purpose of experimental work. Dr. Cassidy's explanation for the immunity of certain teeth from caries, and occurrence and re-occurrence of caries in the mouth, is very nicely brought out, and I am very glad to have heard it.

The point to which Dr. Price has called attention, the re-establishing of the alkalinity of the saliva as a cure for caries of the teeth, is one which is still unsolved and under discussion. It would seem a very easy matter to prevent caries of the teeth by re-establishing the natural alkalinity of saliva, by the use of various mouth washes, etc., but yet it is not the case; they do not do it. Re-establishment of this by systemic treatment, it seems to me, is a much better method of approaching to a cure of dental caries.

Dr. Fletcher: Like the other gentlemen who have spoken, I want to congratulate the Society on having this paper. The statement with which the paper opens interested me very greatly. The chemistry of organized life is a thing almost beyond our capabilities of handling; it brings to our minds the experience of

physicians in treating disease; it brings us to the matter of empiricism.

As to the effects of systemic treatment upon the conditions of the mouth, I think should be taken home by every one of us; we, as dental practitioners, would do well to take this as a standard of work, or as an idea upon which we can work. The idea of the testing of the saliva to diagnose by systemic or pathological conditions is something which could be worked out to the very great advantage of every one of us, and to our patients. So we have in our hands, after having been suggested by our essayist, theories to work upon, simple, plain directions as to how to benefit our patients. It goes without saying that the destruction of the lime salts of the teeth must be due to an acid. The suggestion which he has made, that the saliva being acid when secreted is probably due to systemic conditions, or neurosis or pathological nervous conditions, also indicates the lines upon which we can work. I want to emphasize to those interested the necessity of getting at such an idea as that and carrying it out.

DR. C. M. WRIGHT: When, two or three weeks ago, Dr. Cassidy told me the name of his paper, I wondered how my learned friend would treat this profound subject—in what manner he would view it. I did not quite appreciate his manner of handling it, I must say; but, however, I am very much pleased with it; it is a monumental paper, worthy of this Society and of Dr. Cassidy.

I have long known that there is a chemical aspect of every disease, just as there are chemical aspects of every physiological phenomenon; there is a chemical aspect—there must be—in the metabolism in the blade of grass, just as there is a chemical aspect in the metabolism, anabolic and catabolic in the neuron cell.

It is interesting to know the advance made by neurologists within the last ten years in studying cellular biology, and the facts they have discovered. They view each nerve cell as a nerve organism, taking in food and giving off waste matter; it takes the food from the plasma of the blood. They have also described the changes which take place in the cell when the plasma of the blood is interfered with in any way. They study also the waste products of these neuron cells, and they have found that the

nucleus escapes and is carried out. This causes a vitiated current of the blood, the blood being effected by the lymph, the latter in turn having taken up the waste products of the neuron cell, and thus reflexly causing neurosis.

I do not know whether this means a disease of the nerve cells or whether it is a manifestation of interrupted or disordered nerve action; at any rate, I think we can consider where we have effects or manifestations of this kind we may believe that there has been some disturbance, either in nutrition or in the lack of energy.

I was very much interested in the conclusion of one of the theories of Dr. Cassidy's paper. In regard to dental caries as neurosis, I think it would be well to announce, as adopted here in Columbus in 1900, that dental caries is a neurosis—that is, that the primary cause is neurosis, and not due to direct or immediate bacteriological effects, and we will begin to-day to treat it from that standpoint.

Dr. Barnes: I do not rise to discuss this paper scientifically, but when I asked Dr. Cassidy to write upon this subject I had in mind the very conclusion which he has given us here to-day. I have often said that the dentistry of the future would consist of the study of neurosis. We have more trouble from this cause than any other source. I could name case after case. There are those here who are able to determine the rise and fall of the disease, or neurosis, by decay of the teeth.

Again, take caries of one side of the mouth and total immunity on the other; you have no doubt sometimes wondered what caused it. If you will question your patients from this time forth, in 99 per cent. of these cases they rest upon that side of the face at night, and chemical action is going on all that time.

Another thought occurred to me; when we become fatigued we rest ourselves, and thus tone our muscles by systemic treatment, as it were, not by medicine, not by mouth washes or anything of that kind, but we simply rest our bodies, and as we do this our nerve tone is increased.

Dr. S. D. Ruggles: One subject mentioned by Drs. Price and Smith, that the alkalinity of the saliva has a marked effect on the decay of teeth. Why would not the acid of the saliva have

the tendency to reduce decay instead of assisting? It is well known that a marked amount of acid in the culture will retard the action of bacteria and prevent further growth. So, since decay is due to action of bacteria, why would not the acid destroy the bacteria and thus prevent decay? I have always been under the impression that an alkaline media will give a better growth of bacteria.

DR. D. W. CLANCEY: I do not rise to discuss the paper—I do not feel qualified—but to give expression to my full appreciation; and, as one of the reasons why I am glad I am here, and I shall take greater pleasure in reading it over more carefully. I congratulate the Society on having such a paper read before it.

Dr. Cassidy: I do not wish to occupy any time in closing this discussion. I feel very thankful for the boquets thrown at me. I think the discussion has quite balanced the paper.

In answer to the question raised by Dr. Ruggles, all bacteria secrete an acid which is a poison to themselves, but not necessarily to all other bacteria. For example, lactic acid will destroy the lactic acid ferments or germs, if present in any quantity. But in a mouth where the acid attacks the teeth the acid is neutralized in its action on the teeth; then the germs can go on multiplying and producing decay.

The point intended to be made in the statement that when the saliva comes from the ducts in an acid condition we may presume that it is caused by neurosis, that does not mean we should neutralize that condition with local mouth washes. With all due respect to Dr. Fletcher's powder, which he introduced last year, these applied locally will have no permanent effect; we must look for neurosis, which must be overcome by systemic treatment. I thank you all very kindly.

DENTAL NEUROLOGY.*

BY W. H. WHITSLAR, M. D., D. D. S., CLEVELAND, OHIO.

The composition of man leads one to think that there will ever continue a ceaseless study of mankind. An army of inves*Read before the Ohio State Dental Society, December, 1900.

tigators have given to the world a fund of knowledge which unfolds to those of the present time data upon which every effort is being made to widen perceptably the great truths of nature and make life simpler. Toward these conclusions, however, we find that the means of elaboration have been far from simple. Man has been dissected, every part chemically analyzed, physiologically studied, surgically removed from all but the tender threads of life, and, psychical relations have entered into the common fund of the existence of our knowledge of him. It is apparent, too, that the morbid conditions are factors in the establishment of facts which are monitors to the human race.

We anatomize man to study the structure and economy of his body, analyze by chemical processes the relations he sustains to the earth and how he uses the product of it for his own sustenance, epitomize these two subjects and call it physiology, thus leading to the highest senses that a human body is capable of realizing, namely, those of sight, hearing, touch, taste, pressure and temperature. Some of these senses may become impaired, and there is still remaining an incomparable something which is called "mind."

The reasoning and intellectual faculties as a whole constitute mind. From very early times the brain has been believed to be the seat of all that we mean by consciousness. It is only within recent times that cerebral physiology has demonstrated that a particular sensation is connected with a certain anatomical area. Every thinking human being is concerned in the cerebral processes that lead to sensations, movements, emotions, and intellectual acts. How do these commence and finally cease? It is believed that molecular changes are translated into consciousness and intellectual acts, but how? It is a matter of speculation. We can assert, however, that there is a continuous force transmitted from parent to offspring, bringing with it the inherent property which takes cognizance of co-existing things. The theories of heredity would place this conveyance within the material known as somatoplasm, idioplasm, or chromatin as designated by different theorists. Further than this anatomy or chemistry cannot fathom the secret of transmission of matter. The whole proposition hinges upon the true significance of the

word "Life." Now, the means by which an animal knows that which is going on about it, the carrying of information to some central body, and putting itself into relationship with the surrounding medium, is called the nervous system. In consequence of the relationship to the outer world the nervous system is primitively superficial, and is closely related to the outer layers of the body.

In the very lowest orders of animal life we find sensitivity without a nervous system. The amoeba is sensitive to stimuli and changes the position of its protoplasm because of the irritation. As we ascend in the scale of the animal kingdom we find the nervous system is more or less distributed throughout the whole body.

Without discussing the variability in the distribution of the nervous system throughout the gradual rise in the scale of life, let us inquire into the composition of it in the human being. The essential features of a nervous system are central cells or conducting fibres, and as the organism develops we perceive that cells and fibres become aggregated so that we have definite centers on lines along which nervous impulses will pass. The most important of these masses form the brain or encephalon, the most important fibres the nerve-cords, then there are secondary masses called ganglia and which are connected with the former. Now, information comes from without by a set of specialized cells, sense cells, belonging to the epithelial regions of the body, and these are derivitives of the epiblast. These are peripheral organs in a certain sense. The widest distributed sense cells are the tactile cells, more complex are those concerned in the sense of taste, and still greater are the higher senses of sight, smell, and hearing. With the full development of the brain these organs send to it messages from the outer world, and these are converted into the sensations peculiar to the sense organ from whence they came. These nerves which carry impulses toward the central nervous system are designated as the afferent or centripetal, while the nerves that send impulses from the brain to the peripheral nerves are the efferent or centrifugal terminations of neural action.

It is impossible to tell what a nerve impulse is, whether it is a

wave of chemical change, or, a molecular change, and so far as we know, the only function of the nerve fibre is to conduct impulses from nerve centers to peripheral organs and vice versa, or from one organ to another. This neuricity or nerve force has actually been measured, and its velocity Helmholtz found in the human arm to be from 30 to 90 metres per second. These were motor impulses, but there is no reason to believe that sensory impulses do not travel at the same rate.

Diseases and other conditions may modify the rate of impulse, as for instance, heat increases conductivity, whereas cold diminishes nerve impulse. The change of condition in a nerve may be modified during the application of a current of electricity. A decrease of the electro-motive force in a nerve results when the current is in the opposite direction to the nerve current, and the same force is increased if it is in the direction of the flow of the nerve current. These conditions are designated the negative and positive phases of electrotonus.

Paralyzant action of nerves may be produced by inhibiting the electro-motive force that is, opposing the natural nerve current, or reducing the natural power to a state where it is easily overcome by the unnatural forces. This nerve weakness which is caused by exhaustion of nerve centers is called neurasthenia.

Like all tissues of the body, excepting in parts of the teeth, the nerves require nutrition to maintain health, and proper existence. The nutrition of nerves is dependent upon the nerve cells, which are a part of the fibre in its course, or rather, the fibre is morphologically a process of the cell. There is a nutritive unity between the fibre and the cell. If a nerve is divided and not kept artificially separated regeneration occurs. This consists in the outgrowth of new axis-cylinders in the form of fine fibres from the ends of the divided axis-cylinders of the central stump of the nerve. These push their way into and along the degenerated fibres and develop into complete nerve fibres. Surgery has taught us that peripheral nerves may be brought together, sutured, and their function restored. As early as 1836 Baudens performed nerve-suture, but with negative results. In 1863 Nelaton revived the procedure. Modern surgery, owing to antisepsis and better technique, has increased the percentages of successes in the operation. This led an eminent surgeon to remark that "The surgeon who neglects to suture a divided nerve commits the same mistake as he who neglects to reduce a fracture or fails to unite a divided tendon." Many authors have expressed their doubts as to the possibility of regeneration of brain tissue, and others have gone to the other extreme and claim that complete repairs can take place. An eminent physiologist states that "it is a remarkable and as yet unexplained fact that regeneration of the fibres of the central nervous system, at least in the higher animals, does not occur."

It is very apparent that regeneration of tissues is due to the nutrition of the parts, and the proper nutrition of nerves is dependent on their connection with nerve cells. It has been stated that all tissues are provided with "trophic nerves," which regulate the nutrition of the organs which they supply. Evidence disproves this doctrine. Quoting from Professor George N. Stewart, an eminent authority on physiology, he says, "It is true that division of the trigeminus nerve within the skull is sometimes followed by cloudiness of the cornea going on to ulceration, and ultimately inflammation and destruction of the eveball. Ulcers form on the lips and on the mucous membrane of the mouth and gums, and the nasal mucous membrane of the same side corresponding to the divided nerve becomes inflamed. But in this case the sensibility of the eye is lost, and reflex closure of the evelids ceases to prevent the entrance of foreign bodies. The animal is no longer aware of the contact of particles of dust or bits of straw or accumulated secretion with the conjuctiva, and makes no effort to remove them. The lips being also without sensation, are hurt by the teeth, particularly as the muscles of the mastication on the side of the divided nerve are paralyzed, and decomposed food, collecting in the mouth, and inhaled dust in the nose, will tend still further to irritate the mucous membranes. There is thus no more need to assume the loss of unknown trophic influences in order to explain the occurrence of the ulcerative changes than there is to explain the production of ordinary bed sores, bunions or corns on parts peculiarly liable to pressure. And, as a matter of fact, if the eve be artificially protected after section of the trigeminal nerve, the opthalmia either does not occur or is much delayed."

Also Professor Stewart says: "The nutritive alterations in muscles and salivary glands after section of motor and secretory nerves seem to depend on functional and vaso-motor changes. In muscles they come on far too late to be due to the loss of 'trophic' nerve-fibres."

Now these statements lead us to conclude that centrifugal nerves are, in their functional activities, especially of the vascular system, dominated by the vaso-motor system of nerves. This system of nerves, divided according to its uses, indicate that the vaso-constrictor nerves preside over the motor fibres and the vaso-dilator over the inhibitory influences. In all of these, also including the trophic nerves, there is a unity of action, and where there is a deficiency in one part it affects the normal activities. It is for these reasons then that the study of the physiology of the nervous system should be understood ere we are able to comprehend the pathology of it.

The fifth cranial nerve, called sometimes the trifacial, or trigeminous, resembles a spinal nerve, being compound in its function and arising from two roots with a ganglion upon its posterior root. This nerve and all of its dependencies are therefore subject to its excitement or depression by vaso-motor or trophic changes as well as the so-called sympathetic relations with other nerves. It is easy to perceive thus that other organs than those contained in the mouth are subject to the derangement due to dental origin. This would include most frequently the eyes and the ears. Affections of the larynx, alimentary canal, heart, and even uterus arise because of dental irritation. Authentic cases of hip disease are on record related to dental disease. Indeed, various cerebral disorders may ensue, such as insanity, epilepsy, hysteria, and headache, all of which may be proven by authentic cases.

The most common result of dental irritation or neurosis is local odontalgia, due to diseases of the dental pulp, which may be superinduced even by systemic influences. I have known anaemia to result in a persistent dental neuralgia, to be relieved only by enriching the nutrition of the blood. Professor Flagg reported a case of neuralgia due to malaria poisoning.

Syphilis may have its share in producing pain when the

teeth are associated with periostitis of the jaws, and no doubt the nerves of the dental pulp are affected by the circulation of intoxicated blood. Active contractions of the facial muscles are produced by nerve reflexes, and are known as spasms of the muscles, trismus, and torticollis. Paralysis and tetanus have left records of a previous history of carious teeth. Examples of these are frequently found in literature. A year ago it was my pleasure to restore the free use of an arm by the discovery and removal of the cause; i. e., a putrescent dental pulp in a lower third molar, to which one end of a gold bridge was attached.

One of the most common results of diseases of the teeth aside from odontalgia is facial neuralgia or prosopalgia. The term neuralgia (nu-ral-je-ah) literally means "pain in a nerve." It is a term used to designate something we do not understand excepting as a disagreeable sensation. Pain is only one of the phenomena of reflex irritation.

In all of these conditions above related, age, sex, heredity and climate are important predisposing causes of neuralgia.

The seriousness of dental neuralgia is made clear to us when it is considered cerebral difficulties follow dental disturbances. Headache is a common example, but epilepsy, hysteria, and insanity are the distressing ones. There is a class of humanity that is deficient in nerve function, particularly of the central nervous system, induced by traumatic or hereditary influences. These individuals are apt to succumb easily to mental or other nervous diseases. Primarily, however, these diseases might occur without external influences, having in the course of development of the body been pathologically predisposed to this class of diseases. In other cases, eternal influences, such as mental work, sorrow, care, psychical irritation, and disease give rise to an outburst of pathologic brain or spinal function.

It is a matter of common experience among dentists to notice individuals suffering intensely with dental irritation, that the borderland of insanity has almost been reached. It must be conceded that in most of these instances there is a condition or phase which might be called a neuralgic diathesis, in which depression, or lack of nutrition, superinduces lack of co-ordina-

tion among the sensory cells of intelligent design. Thus perverted nutrition is influenced by nervous excess, emotionality, intellectual strain, and diseases of the teeth occur as well as lack of their proper development.

In conclusion, gentlemen, while dental neurology comprehends the anatomy, physiology and diseases of the dental nerves, it is my conception that it should include those psychical relations which are so often observed between dentist and patient. The length of this paper precludes, however, the discussion of this phase of the subject at this time.

DISCUSSION.

Dr. H. A. Smith: From former papers read by Dr. Whitslar I have been impressed with the fact that he is a most excellent physiologist, and the paper to-day convinces me that he is also well up in pathology.

A lady once said to me, "What is the reason that dentists are not able to control pain? Why don't they treat these symptoms more?" It was a poser to me. "Are not they taught to relieve pain? It seems to me they are." But the question is, Are we taught to do this—do we relieve pain? If we do not it is because we are not good physiologists; we do not understand the physiology of the system, and certainly we cannot be pathologists and treat nerve pain unless we are such.

It is not very good form to cite cases, but we all of us have such cases. This case was one of odontolgia, presented by a man who was not certain as to location of it, but thought it was in the lower jaw. On taking his seat in the chair he said, "The pain has gone to my large toe." Thus it went from one place to the other. The irritation was primarily in the large toe, and through reflex neurosis affected the teeth, as there was no apparent cause present in the teeth.

There are many cases where pain is reflected to the teeth from the eye and ear. For a long time oculists did not believe that lesions of the teeth would affect the eye, but more lately thy have come to recognize the truth. In 1885 there was quite a prolonged discussion between a Dr. Sexton, of New York, and Dr. Harlan as to the advisability of saving devitalized teeth. Dr. Sexton had fifteen hundred cases where diseases of the ear were caused through devitalized teeth. Dr. Harlan claimed it was not necessarily the cause. But there is no doubt that a tooth without a pulp is at times a source of irritation, and Dr. Sexton claimed this was so, although not always recognized by the individual, and Dr. Harlan to the contrary.

The question now comes up, What condition of the pulp causes it? Is it a hyperemic condition of the pulp, or is it caused by peridental disease of some kind? It is probably a pulp in which there is a hyperemia which induces reflex action in the organ of hearing. When there is caries you have more or less irritation of the pulp, and this could cause earache reflexly. So it seems that Dr. Harlan was correct in his statement.

Headache is also very frequently the reflex result of diseased teeth. I wonder if we realize what a great deal of discomfort of life arises from headache? If we did there would be much more care on our part.

An English gentleman—a Dr. Hilton, I think—in diagnosing headaches produced reflxly from the teeth, claims, if it is an occipital headache, the anterior teeth of maxilla are affected; if the headache is temporal, it is invariably the upper teeth. These are well-established facts. I recall a case where the reflex from diseased teeth affected the sight.

A teacher, female, had excessive lachyrmation; she was kept from her occupation by the excessive flow of tears. It was more profound in the left eye; she could scarcely see. On that side of the mouth we found a tooth the pulp of which was exposed, but still alive. On the proper treatment of this tooth the flow of tears ceased in three weeks. The other eye was not so bad, only slight lachrymation; but there was also a lateral incisor which was abscessed; on treating this the flow in that eye ceased in about the same time. I cannot discuss this paper, but have simply stated a few cases. I will be very glad if the doctor, in a concluding paper, would go into the discussion of the psychological relation of ourselves to patient. I think we are indebted to

the essayist for so able a paper, and I only regret I could not give it more attention.

DR. Otto Arnold: I had the pleasure of looking over the paper for a day or two, but found the subject so very profound I concluded I would confine my remarks to a very few portions of it, and bring it down to the practical side as far as possible.

The essayist has presented to us an epitome in neurology which contains valuable food for thought. He has shown us something of the magnitude and complexity of the nervous system; also its susceptibility to extensive disturbances from slight causes. He has confined himself to a statement of theories without taking a positive stand in any of the points at issue, and left the practical application of the subject to others. In the application of this subject to the practice of dentistry I need only remind you, without entering into details, of the familiar clinical factsthe exhibition of pain and discomfort beyond the point of actual injury. Indeed, it is a very well accepted mode of procedure in cases of neuralgia about the face and cranium to search cautiously for exciting causes within or about the teeth, such as exposed pulps, putrid canals, pulp stones. There may be irritation from large fillings, etc. Neural disturbances from dental irritation may and do manifest themselves in a variety of ailments among children during the eruptive period, due to irritation at apical ends of the developing teeth. This cause, I fear, is not always recognized by the general practitioner. Again, the result of dental irritation may be a neurasthenia, leading to insanity. These latter and more serious conditions are seldom seen by dentists, except in the cases referred to them by physicians who recognize such relations, or under other unusual circumstances, as in the following instance:

Some years ago my services were sought to relieve a number of insane patients who were suffering from well-defined dental affections. After operating for all that were known to require such services, the attending physician directed my attention to a good-natured looking woman of about thirty years of age, who had been present throughout my operations, and seemed an interested but speechless spectator, and had been an inmate of the

hospital about two years. The doctor, more in jest than otherwise, asked her if she did not also wish some teeth extracted. To our surprise, she nodded assent. I proceeded to examine her mouth, and was again surprised at what I saw. The upper molars on both sides were loose with abscesses of long standing, that had invaded the tissues in all directions. Extraction was resorted to, which was followed by the discharge of large quantities of offensive pus, and altogether this was the worst case of the day. The remarkable fact in this case was that she had never complained nor shown any unusual symptoms associated with such disturbances. I did not again see this case, but was informed at intervals of her improvement and final dismisal as cured of her mental ailments in less than a year. May we not at least conjecture that the dental trouble was an important factor in this case?

DR. WRIGHT: I have been very much interested in Dr. Whitslar's paper. I have heard several of his papers, and they have always been of this high class. During the time of its reading there were several things I thought I would like to know more about. Psychology for one. Another question in regard to trophic nerves—whether simply vaso-motor or trophic in their influence? Another question is this subject of neuron. I would like to tell my history of trying to get on to that subject.

When I first heard Drs. Heise and Fletcher, of Cincinnati, speak of a new nerve theory as the neuron theory, I asked them, What does it mean? I could not get a satisfactory answer, and I was on a chase for a long time, asking one and another, but could get no satisfactory answer from any one. The number of different answers I did get to the neuron theory were simply appalling. Finally I was directed to where I could get satisfactory enlightenment. Picture to yourself an octopus, with body and arms reaching outward and then inward, and we have a picture of a cell with its axis cylinder, and a great many more nervous diseases could be accounted for by this morphological structure than any theory I know of. The fact of memory and some of the psychological phenomena can be accounted for on this neuron theory.

Another question: In surgical operations, where there has

been a division of a large nerve, can it be regenerated? It seems to me we are still in the dark on this subject. Of course, the connective tissue surrounding these nerves is easily and promptly repaired, but whether or not the living nerve is regenerated is still one of doubt. We have seventy-six millions of people in the United States. Some neurologists have said that in the human brain of an adult there are some seven hundred millions of nerve cells. We can readily see what a terrible thing we have to study if we are to know all about them. Fortunately for us, they are arranged in bundles or columns, a great many acting toward the same end, and we can thus quite easily get at their action.

Dr. Smith referred to these reflex troubles. Richardson also made valuable studies in this direction. One case of mine: I extracted a bicuspid root for a man, which did not hurt as far as I was concerned at all; but he curled himself up and complained of pain in his ear. This was rather strange, and as he was an instruction, impress upon their minds that the work they are going into is that of a learned profession, and enforce upon them the necessity of a thorough knowledge of chemistry, bacteriology, physiology, etc., instead of letting them believe that it is purely mechanical, and when they have a thorough mastery of this it is all that is necessary? They should possess as thorough an education as the medical practitioner. This will therefore necessitate our colleges and general profession enforcing these studies, and when it comes to the four-year course I think it will be done.

Dr. H. A. SMITH: Dr. Wilson has suggested a thought which is well worth noting. I wish to say just a few words to often hear such question as this, "This physiological chemistry—what in the world does it amount to, and what is the necessity of it?" I wish I knew more about it.

We occasionally have papers of this kind, and, notwithstanding they are beyond the reach of most of us, yet they are most valuable, for they set us to thinking and studying. One point I would like to ask Dr. Whitslar: How can we have irritation if the subject is not sensitive? There was a sort of play of the words along there on the second page of his paper, I thought. That we could have irritation where there is no sensation is something of which I was not aware.

DR. GEORGE H. WILSON: While the doctor was reading his paper the thought came to my mind, Here is an illustration of a point brought out in our President's address, the thought of impressing upon students entering into the study of dentistry of its high professional nature. Should we not, when we give such ear specialist I asked him to make some study of it and give me some of his results; but nothing definite was ever ascertained.

DR. C. R. BUTLER: It just occurred to me that, notwithstanding this subject is set down as being one of the most important, that we dentists should understand and know all about, at the same time we must be careful not to theorize too much. All of you who attend the Society regularly know that there are a few men who always present some wonderful ideas in papers, but which are practically useless. We want something more practical; we must have a foundation to stand upon. If we had a good foundation to use as a fulcrum we might turn the world over. But these two papers just read, which are much alike, are not of this order; they are fundamental, and in order to be intelligent practitioners we must know some of the fundamental principles in the chemical phases, physiological and pathological. You correct the thought in the minds of the laity that dental colleges are negligent in the teaching of these branches. In the college with which I am connected we have a society, formed of the junior and senior classes, for the purpose of discussing various subjects pertaining to the practice and science of dentistry. very subject under discussion is the important one before them to-day: "Is the study of chemistry an important thing for the profession?" They form into two sides and debate the question. When they take this subject up for discussion I think it shows that they realize the necessity of the thorough knowledge of these subjects.

DR. WILSON: I did not mean to say that the schools do not teach such subjects, but that the general profession should advocate the necessity of this, and when the students go into the colleges they will not think them superfluous. We should educate them to believe that it is the foundation of their work, and that all their future success will depend upon it.

DR. W. H. WHITSLAR: About one hundred years ago Galvani, the great scientist, had seen electrical fish, and in endeavoring to find the cause he suspended them by a copper wire from an iron rod on his balcony, and he observed the remarkable fact that when the wind blew the fish against the iron rod there was a peculiar twitching, and it set him at once to thinking what caused this, and he finally concluded that there was some electrical current developed within the fish.

At the same time Volta, another scientist, experimenting with metals, found, by taking two metals of different kinds, zinc and copper, for example, and bringing them into contact through some fluid they created an electrical current also. He repeated Galvani's experiment, and concluded that Galvani was mistaken in his ideas, and that there was no electrical action in the fish, but the action was produced by bringing into contact the copper and iron metals. The flesh of the fish acted just the same as the fluid between the two metals. Consequently he concluded that there was an electro-motive force in the nerve of the muscle of the fish. The question then arises, Is this a molecular or chemical change? This is not decided as yet. There must, however, be some chemical change. Take, for instance, the nerves of the spinal cord; they are about sixty per cent. water, and the remaining per cent. is proteid, etc. And it stands to reason that there must be some chemical change between these elements which causes these neuralgias.

We do not know that there is some kind of a current which goes back and forth along the nerve, stimulating this muscle, and it would therefore also seem that it is not impossible that there is a kind of electrical current passing from one person to another. Example: At the Tri-State meeting at Put-in-Bay there was an old practitioner present, and, with a number of other young men, I gathered around him to listen to some of his doctrines. He was asked how he got hold and controlled his patients. He grasped the young man by the hand and looked him in the eye and said, "This is the way I get hold of the patient first, and I am then able to control him in the chair." It may be hypnotic power; it is at least psychological. We have such an example here to-day. The doctor here says I am a good physiologist, yet

I know I am not. I have tried to study this simply because I might be better able to control my patients. Students to-day do not give the proper attention to it; they do not realize the amount of good to be derived from the study of physiology. It is one of the paramount principles in the science of dentistry. We are constantly studying physiology in our offices, and if we were not we would not be able to become proficient practitioners.

CONTINUOUS GUM WORK—A CRITICISM.

BY L. P. HASKELL, CHICAGO, ILL.

I hardly agree with Dr. Beauman on some points in his article on Continuous Gum Dentures. It is just forty-nine years this month since I purchased in Boston, for \$150, an office right for the use of this method, and have used it continuously ever since.

I have found it the strongest and most durable work made, but consider my success owing to my effort to make the work strong, and see that it is properly articulated so as to have no undue strain. I use nothing thinner than 28 guage; double posterior margin about one-quarter inch to strengthen; to leave a thin margin, to allow for change of margin if needed, and with edge turned up a very little to protect edge of porcelain. The wire on outer rim of plate soldered edgewise, and of soft platinum, as it is more easily adjusted. The continuous backing, in three pieces, lapped back of cuspids, with foot piece so as to adhere firmly to the plate. As the pure gold, very thin, is placed beneath the foot-piece, it cannot flow over the plate. A small piece is placed under each pin, and remains there. As I use compressed air in soldering, can give sufficient heat for plate to absorb the gold if there is excess. Now this process is simple and effectual, except in very rare cases and peculiar conditions, and then some additional strengthening.

He says, after wiring, try the plate in the mouth, and if sprung, place on the die and reswage. Why try it in the mouth? If it had been swaged on an unshrinkable die, it would fit the plaster cast, and so place it there to see if it had sprung, and if

so is easily pressed back in place with the fingers, providing the wire is not a stiff, incorrigable one.

One of the advantages of the use of Babbit metal is in the non-shrinkage, so that the plate when swaged can be referred back to the plaster cast, and as that is presumed to represent the jaw, and the plate fits it snugly, I find no trouble in its fitting the jaw. And this is my constant experience, confining myself to artificial dentures.

I never have occasion to use soap in cleaning the case after soldering, but do use the brush which has had soap on it, yet never discovered any bad results.

PRESIDENT'S ADDRESS.*

BY L. L. BARBER, D. D. S., TOLEDO, OHIO.

We are here to participate in the deliberations of the thirtyfifth annual meeting of the Ohio State Dental Society.

I want to thank this Society for the honor they have conferred by electing me to the presidency. When I think that since the first meeting thirty-five years ago, only thirty-five men could have been chosen to the same place, I take it to be indeed a great compliment.

I do not intend to anticipate the report of any committee, but trust they will all be prepared to make such reports as in their judgment seems best. I sincerely hope the Committee on Constitution and By-laws have their report. Their work is an important one and should have had their careful consideration.

I am sure the Necrology Committee will have a report to make that will be a sad blow to this Society. I refer to the death of our beloved brother dentist, Dr. Charles Welch.

I believe that at last the dentists are to be recognized in the army and navy. If I am correctly informed, the bill will surely pass when it comes before Congress. The Surgeon-General advocates the measure, and it practically has received no opposition. If I am not mistaken, the move was resurrected and started afresh in this Society six or seven years ago. Our com-

^{*}Read before the Ohio State Dental Society, December, 1900.

mittee has been very zealous ever since, until all sections have taken it up and pushed it to what is likely to be a final issue. While the bill does not provide as liberally as desired, yet, when the service is once established, its importance must soon be recognized, and ultimately the dentists will get their just dues, both as to position and honor, in the army and navy.

And now, gentlemen, I went to present a few thoughts for your consideration.

In 1865, at Mt. Vernon, Ohio, a meeting of the Central Ohio Society was held, at which time Dr. J. B. Beauman, now of Columbus, Ohio, made a motion that a State Dental Society be formed, which was done, and the Central Ohio was absorbed by it.

The objects set forth in its Constitution are as follows:

First: The elevation of the standard of professional education.

Secondly: The advancement and cultivation of dental science and literature.

Thirdly: The protection of the public from the evils of empiricism.

Fourthly: The promotion of the honor, usefulness and interest of the profession and mutual fellowship and good will.

How nearly have we come up to the original objects? I will leave that for you to answer.

Do the members of the Ohio State Dental Society desire any restrictive dental laws in our state? If so, what?

What are the causes of our failures in securing up-to-date dental legislation? I confess I do not know, and mention it that some one may shed some light on the subject.

I want to say a few words upon a subject that to me, at least, is very important.

What is the present status of dental education? I have no hesitancy in saying that the average dentist of to-day is much better educated than in years past, and it is plain to every observant person, in the profession and out of it, that the dental education is having its influence.

The profession is no longer looked upon as a mere trade, but is ranking well up the scale. But, gentlemen, who are the men who are largely responsible for the good that dental education has accomplished? Are they the rank and file in the profession, or are they, indeed, the one here and the one there who have gone through trials and hardships, which few would care to encounter, to obtain their high dental education, and to give us the means at hand for an advanced education?

But while they have brought dental education to its present status, still there are some points of failure. Are we taking it up and keeping pace in proportion to our ability? Here is the opportunity to analyze our own capacity for the performance of a public duty, which at some time falls to the lot of us all; that is, the selection and education of our pupils.

There are very few of us here who have not had more or less experience in this direction, either in or out of colleges. In the light of that experience, is it not a fact that too little discrimination has been used in the selection of the material for the coming dentist?

I cannot but feel, after reading the vast number of dental announcements that have come to me this year, that the rapid multiplication of dental schools in the United States involves a question which is menacing the future of the dental profession.

The aim, in some instances at least, seems to be to bring a large number of students together, without reference to their education, either preliminary or special, and when they have them, to see how quickly they can get rid of them; for the faster the treadmill works, the more money, and the more money the more effort on the part of these schools to get pupils. This is wrong. But are the schools entirely to blame? They are not!

The demand is for an education that has the greatest commercial value; that which can be the most readily turned into gold. Therefore institutions of learning, of whatever character, are seldom on a level, or at least in advance of the public demand in the matter of education.

The elevating force must come from without as well as from within. Have we, as dentists, done our part in advising young men to attend only the best schools where they must work in order to attain the degree of perfection necessary to obtain a

diploma, or are some of us sending them to institutions whose policy is broad and easy?

I fear the latter is true in many cases.

To a great extent the remedy for this evil is in our hands, as individuals, did we but recognize the necessity of accepting as pupils only those who possess the natural qualifications for the study and practice of our profession.

The time was when a young man, college or no college, would work out his own salvation, as regards an education, professional or otherwise, and stand or fall by it, and he usually stood.

Conditions are different to-day. Should not we, as dentists, require of a person, who may apply to us for studentship, that he have nearly the following qualifications: A diploma from some good high school having a four years' course; a diploma from any reputable literary college, or satisfactory evidence that he possesses an equivalent. For well-tempered must be the steel and keen the blade in the battle of life. Each man has only what he can seize and hold against unrelenting competition. The brain that thinks and weighs, the eye that questions and discovers, are the ones that are in the fight to the end, and not as a mere private either.

If we as individuals would require the student to be up to the proper standard, would not the colleges be glad to raise their standard? They know it is too low; that is, many of them do. A few do not care, but they would soon be out of the race. Let certain others drop some of their ideas of getting students and then giving them the same old lectures year after year. Every good teacher is not a good lecturer, but one who is qualified to teach a branch, knows that branch well enough, to tell it to the students in an understandable way, and still keep up with the new things in that branch as they come along—give them the things they need in a way that they will retain and understand them. Then are they ready for life's battle.

It is just as necessary for a man in dentistry to keep up his knowledge of essential things pertaining to his profession and add thereto, as it is for him to be compelled to have in store an abundance when he begins practice.

In what better way can he put in three or four days every year than in attending the State Dental Association. I believe that any of us would study many times four days to get the knowledge attainable at one of these meetings. This is but one good that dental education has accomplished for us.

Imagine a man, created in the image of God, sacrificing every pure and noble impulse and the association of friends; no time to attend dental meetings or for the cultivation of the higher impulses in the mad rush for gold. Such a one deserves the pity and condemnation of every right thinking man. The man who is content to live within his own little shell, or radius of his own vision, "is little better than the ox that is content to feed on the grass in the meadow, or the worm that crawls in the dust."

I believe it has occurred to most of those present, who are in the habit of attending dental meetings, that the average dental discussion many times falls far short of what it might be.

It is presumed that papers are read and discussions had thereon to the end that those present may be mutually benefitted.

It has occurred to me that the fault, or part of it at least, may be laid at the door of the presiding officer. The best business meetings are those where the most rigid rules are adhered to. While our societies are not above criticism in this respect, yet the greatest defect is not here in these bodies. While a society may err in the letter, it rarely ever is intentionally wrong in carrying out the intent of the laws governing its routine business.

When, however, the reading of a paper and the discussion thereon comes up, the widest latitude is permitted. Extraneous matter is freely admitted, so that by the time the discussion is well advanced, it bears really no relation whatever to the original subject under discussion.

If it is true that a dental society is for the mutual benefit of its members, then it is the duty of everyone connected with it to see that the object is obtained in an orderly and effective way.

Any subject under discussion before a dental society is virtually on trial for its accuracy. Those taking part in the discussion are contributors of testimony. The conditions are essentially those upon which cases are tried in legal courts, and it would

exclude the possibility of irrelevant matters being introduced were the same rules in a general way adhered to.

For the introduction of matter, it makes no difference how important it may be of itself, if foreign to the subject under discussion, only tends to confuse the listeners and leaves the impression that after all one is attending an experience meeting.

A little closer application to the text would admit of a much clearer summing up of the discussion and a much more definite conclusion may be drawn of the evidence offered.

In conclusion, I want to thank all of the officers and committees, and especially the Executive Committee, and to those of you who have never had anything to do with getting up a program for a dental meeting, I want to say—were you to serve but once, I am sure you would thereafter respond more readily when asked and urged to do something for your State Society.

The officers and committees can and do accomplish all they are able, but they cannot do it all. It is the duty of every member of this Society to in some way contribute to the sum-total of good accomplished by it. If you do not read a paper or give a clinic, are not one of the officers or on some committee, then make yourself a committee of one, and see that you get at least one more to join the Society, for by helping them and the Society, you cannot but benefit yourself.

The influence of this Society for good must ever depend upon the individuality of its members. That individuality is soon to be made up of the younger men of the profession, and the noblest sight this world offers is a young man bent upon making the most of himself. All may not rise equally, yet on the whole rises very much according to his deserts. Therefore, our Society will be strong just in proportion as every member develops individual strength and then brings that strength to the support of the State Society.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

COMPRESSED AIR IN DENTISTRY.*

W. A. HECKARD, D. D. S., INDIANAPOLIS, IND.

I lay no claim to originality in the application of compressed air in dentistry, other than that of using it on the disk to counteract the heat caused by the friction in revolving the disk against the filling, and to cool other instruments, for as yet I have not heard or read of anyone else having made this application.

I have been usuing the Davidson spray bottles to spray and the Richmond warmer for desiccating dentin, and I use a small "home-made" tube when I wish to spray air alone. I use the air from twenty-five to fifty pounds pressure. In disking fillings my assistant turns on air enough to suit the case and neutralize all heat caused by the disking. Sometimes the patient will say, "It is too cold." Then my assistant either uses less air or makes the distance greater from the air tube to the filling.

Compressed air is a time-saver, for by turning a stream of air onto the filling you can allow your disk to make as many as one thousand revolutions per minute, if you wish, without causing any discomfort to your patient.

When using the root-reamer and the facer in preparing roots for crowns, not only does the jet of compressed air keep the heat down, but it blows away any mucus or blood that may get in the way, and this not only makes the root remain clear and distinct while being prepared, but gains much time and does away with all pain, a thing to be desired by both dentist and patient.

Before I extract teeth I spray the mouth thoroughly, using a Davidson atomizer containing borolyptol in distilled water. The

^{*}Extracts from article in Indiana Journal.

gums heal very rapidly afterwards. The reason is apparent. By blowing a steady stream of compressed air into a pyorrhea pocket you can keep it dry and by aid of the mouth mirror put a light in the bottom (or top) of the pocket and thereby diagnose the extent of and treat the disease. Likewise with deep fistula. Then in treating pyorrhea, fistula or diseased gums, you may use compressed air to force your medicines under the gums, into the pockets, through a tooth, cut an abscess and use the medicines and solutions warm. In regulating cases I have my patients come in every day, if they can, and use a spray of warm antiseptic solution in and around any appliances that otherwise might have to be removed to thoroughly cleanse.

This saves time, and besides, when an appliance is working well I do not like to take it off until it has done all that it has to do. To you, my friends, who have not used compressed air, you have no idea how nice it is to have your assistant blow out tooth shavings, pieces of old fillings and to have your bur kept cool at the same time. After polishing molar fillings nothing removes the chalk or fine pumice like a good strong spray solution. When I use warm pyrozon and distilled water at forty pounds pressure, heavy mucus and stain melts away. Now I do not presume to state that all stains can be removed in this manner, for there are stains that can not be removed thus. I refer to such as are found on the average neglected teeth.

To use a warm solution of distilled water containing one of the popular mouth antiseptics, and you must make it distilled water if you wish your atomizers kept in good order; to rinse a cavity that has a pledget of cotton in it for a day of fwo, you destroy all odor and please the patient. Likewise, after wedging, it does feel so pleasant to the patient to have the spray turned into where the wedge was. In making an arsenical application I rinse out the cavity with a warm solution for a minute or more, using compressed air as the force. I dry the cavity by means of hot compressed air and alcohol, and mix my application of arsenic as I have occasion to use it, and unless I have a pulp that is already dying or trying to abscess, or I find pulp stones (afterwards), I never have any pain from arsenic. I believe this result is due to two reasons—drenching the cavity with an anti-

septic first, and to the applying of freshly mixed paste. If I do find pain, I can feel certain in diagnosing a pulp that was just about dead, or pulp stones, but pardon me, that is another story.

In cooling the wax bite in the mouth, compressed air is better, in my estimation, than ice, ice water, or anything else I have ever used; it is not too cold, and still cold enough; and when you have removed the wax from the mouth you can, by one or two little puffs of the compressed air, blow the bite dry of saliva.

In removing tartar, like in exploring pyorrhea pockets, the air forces the gums back from the teeth to such an extent and keeps the blood and saliva away so that "scaling the tartar" is a comparatively easy task. After removing the tartar I have found that by using the warm, mild antiseptic solution, the gums assume their healthy and normal condition much more readily than usual. Of course, in all cases is prescribed a brush massage for the teeth and gums, and I am inclined to believe that the weight of the compressed air, if used daily, acts as a massage, and I use it on every patient, every sitting; if I should not, I would be reminded.

In deep fissures and between teeth it is sometimes hard to locate or determine decay, and not unfrequently have I had to apply the rubber cloth to dry the fissure and have applied the separator to locate cavities between teeth. Compressed air will attend to all that for you, and in much less time. And I wish to state that it is my belief that from a standpoint of office condition, appointment or equipment, I know of nothing, after asepsis, that seems to please intelligent patients so much as the different applications of compressed air.

I use water pressure to pump the air, though there are wheels, hand pumps and lever pumps that are good. I prefer the automatic way. You want plenty of gallons as well as good pressure, not less than sixty gallons and it had better be one hundred gallons. A sixty-gallon tank at eighty pounds pressure will go as far as a one hundred and twenty gallon tank at forty pounds pressure. You can get a gauge at a machine shop, a tank at the plumbers, a pump at the surgical supply house, and any plumber can set it up.

I heat the spray bottles by placing an eight candle power

incandescent lamp in a small copper box, $4\frac{1}{2}$ by 6 by 8 inches, with holes in the top to receive the bottles and dampers on the sides of the box to let out the excess of heat. I heat the air with the ordinary Richmond carbon syringe tube, holding the alcohol lamp under the carbon reservoir while the air is passing through the same. It was my intention to have one to be heated by electricity similar to those made by the S. S. White Dental Mfg. Co., to show at this meeting, but the party who is making it has not had time to complete it. I will state that the Garhart Dental Mfg. Co. have now under construction for the profession just what I have been trying to get made, by way of an electric hotair syringe for compressed air; likewise an electric lamp for mouth mirror and gold annealer. I will be glad to assist any one who may contemplate putting in a compressed air outfit.

SOME SUGGESTIONS TO DENTISTS ON PRACTICAL STERILIZATION OF INSTRUMENTS.*

HENRY C. BOENNING, M. D., PHILADELPHIA, PA.

The practical application of sterilization is an exceedingly important matter to the dentist.

Sterilization as ordinarily advised is inapplicable to the delicate and variously constructed instruments employed by the dental profession. For instance, should the dentist lay in the pan of an ordinary steam sterilizer delicate instruments and nerve broaches with handles of ivory, bone, wood or rubber, the result would be disastrous—the instruments would probably be destroyed. Therefore, it seems that some suggestions which will be of use to the dental practitioner, giving a simple and practical way to sterilize delicate dental instruments and have them surgically clean, without injuring them, may be both timely and advantageous.

Let us suppose that we have to deal with a lot of excavators, nerve broaches and burs. We agree that before these instru-

^{*}From The Stomatologist.

ments are used they should be surgically clean. An excellent plan to sterilize them is to scrub them thoroughly directly after use with a good bristle-brush and an abundant lather of some good detergent soap, or with tincture of green soap.

Use the bristle-brush carefully so as to take away all particles of foreign material from the instruments, which should then be rinsed under a stream of very hot water.

Dry each instrument carefully. This is the more readily done after the instrument has been immersed in the hot water. Now lay the instruments away within the folds of a sterilized towel.

Just before using the instrument dip, at least that portion which may in any way come in contact with the patient's mouth or teeth, in absolute alcohol, or as near it as can be obtained. Allow it to remain for a moment; while it is immersed in alcohol twirl it between the fingers so that it shall cover every part; then lift the instrument out and pass it over a flame, when the small adherent quantity of alcohol will be burned off, without injuring the temper of the finest instrument.

Should any instrument be of such shape or construction as to retain a sufficient volume of alcohol that when ignited it might damage the temper, under such circumstances, be careful before passing that instrument into the flame to shake off the excess of alcohol.

The greatest care should be exercised by the practitioner in the thorough and complete sterilization of extracting forceps, and similar instruments. The plan outlined for the mechanical cleaning of broaches with brush and soap should here be vigorously put in force. After this they should then be wrapped in a clean towel and placed on the tray of the steam sterilizer, and the process of sterilization continued for at least twenty minutes. The towel containing the instruments should then be removed and laid upon a perfectly clean surface. Any moisture will be dissipated by the heat of the instrument.

Another very simple means of sterilizing forceps is to immerse them in boiling water for ten minutes before application. The water in this case should contain a certain quantity of an alkali, such as sodium bicarbonate, say, a teaspoonful to the quart.

There is no reason why a pair of dental forceps, however, after being made mechanically clean by vigorous brushing in in a lather of soap, and then laid away between the folds of a sterile towel, should not be made surgically clean by immersing all that part of the instrument which may come in contact with the parts to be operated on in alcohol, and then burning off the alcohol after the manner before described. This is more expeditious, and, as it is done in the presence of the patient, assures him of the cleanliness of the instrument.

The purpose of sterilization is, of course, the prevention of infection by micro-organisms, germs, bacteria. These are found everywhere. Many of them, from a surgical standpoint, are entirely harmless. Some of them, however, are highly infectious. Thus it is the easiest thing for a dentist, who is uncleanly, and who, for instance, has used his instruments on a diphtheritic patient and failed to make them surgically clean, to inoculate some other patient, upon whom he may use the same instrument.

In like manner, through a lack of cleanliness, pus-germs may readily be carried from patient to patient, or that most dreadful disease, syphilis, may be communicated to another patient who may remain entirely unconscious of the source of infection and even of the nature of the disease.

Concerning the sterilization of other metal appliances used about the mouth, after a thorough cleansing they should be immersed for a few minutes in a 1-1000th solution of bichlorid, if they are not affected by this agent, and just before applying, the practitioner should flush them with sterilized water, or a 5 percent solution of boric acid.

Towels and napkins, and all dressings of that character, should be sterilized for half an hour in an Arnold Steam Sterilizer, and placed in surgically clean jars having wide mouths and close-fitting lids. The towels can then be taken out as required. If the steam sterilizer will hold the jar containing the towels, put all in together; first, however, remove the lid and place it beside the jar in the sterilizer. Then allow all to remain for an hour.

Mechanically clean towels and napkins thus treated are made surgically clean.

THE USE OF NON-COHESIVE GOLD AND TIN.*

BY J. R. CALLAHAN, D. D. S., CINCINNATI, OHIO.

The gold I use is Abbey's non-cohesive, No. 10.

The tin is the S. S. W. extra tough tin foil, Nos. 10 and 2.

Sheets placed upon one another in the order named.

FORMULA A.—No. 10 gold. No. 10 tin. Gold and tin in equal parts. Folded and cut in strips.

FORMULA B.—No. 10 gold.
No. 10 tin.
No. 10 gold.
Cut in strips or ribbons.

FORMULA C.—No. 10 gold No. 2 tin. No. 10 gold Gold, ten parts; tin, one part. Cut in strips.

Using the light numbers of any foil is to me unsatisfactory, because they will break, tear, or crumble more or less under the plugger points; nor do they produce a filling so solid as will foils from Nos. 10 to 60. The heavier numbers drive ahead of the instrument and for me produce better results.

Almost twenty years' experience and close observation, assisted by more or less accurate records, have led me to the adoption of the above formulas.

After trying almost every brand of foils known, the Abbey gold and the S. S. W. extra tough tin foil have proven themselves to be so far superior for this work that it is not worth while to discuss other makes in this connection.

For children's teeth, or other wholly or partially submarine work, Formula A is to be recommended. No amalgam will work easier, and no filling of any material whatsoever will approach it as a tooth-saver under like conditions.

I am and always have been strongly in favor of having perfectly dry cavities, but when I see these fillings that have been put in under saliva and have saved the cavities from further decay from childhood to manhood or womanhood, and still in

^{*}Extract from article in Indiana Dental Journal.

perfect condition to-day, by the score—and many other fillings in the same mouths needing renewal—I must confess that I can not dispute the theory of Miller—I think it is he who says, virtually—that moisture is at least no disadvantage in the presence of tin gold.

For cavities that are not too conspicuous, or do not present unusually broad surfaces to forces of mastication, Formula B is to be chosen. This is perhaps the best combination for buccal cavities. On occlusal surfaces this proportion of gold will maintain a fairly good color, and wherever used, except for contour work, is superior to any amalgam, and can be put in and finished in the same, and most likely less time.

In cases where color is a consideration, or where a large part of the occlusal surface is involved, Formula C is to be preferred. This combination will be found to work a little stiffer than the other formulas, yet it works quite easy and spreads well under the plugger and burnisher, and when properly finished shows a color of about 18 or 20 K. gold; and on occlusal surfaces will keep the gold color, and make a filling that will stand wear as well as a No. 60 cohesive gold foil filling in four-wall cavities.

This is a pretty strong statement, I know, but an examination of mouths that I can show you will convince any "doubting Thomas" of the absolute correctness of this seemingly rash or enthusiastic statement.

As to methods for placing the filling materials in the cavities—the floor of the cavity should be as flat as is possible to have it, walls slightly beveled. Use the old-fashioned hand pressure and wedge points for small cavities. For large cavities, the Bing pluggers and method.

After the filling material is in position and the cavity more than full and pressed home with the large round points, then go over the surface of the filling thoroughly—under heavy pressure—with steel Herbst burnishers. This will press the metal down solid and spin it out to the walls; in fact, if thoroughly done will so solidify the gold and tin that the next instrument will cut instead of tear the foils. Then dress the filling down with large cross-cut burs that have had all the sharp edges reduced by running the bur on sandpaper. These burs will cut

the filling down and at the same time assist in solidifying the mass, and will not cut the tooth. It is better, though not absolutely necessary, to use the Herbst burnisher again at this point—finish the filling—using stones that have been dipped in pumice in the same manner that we use wooden polishing points. Follow this with the leather points and pumice. The gold color does not appear until this stage of the procedure. The final polish is as important in this as in any other filling.

Keep in mind the necessity of getting the filling as thoroughly consolidated as possible. I have experimented with hand-pressure and mallets of all kinds, but the method here given has always produced by far the best results.

I have not touched upon the changes the material undergoes after a time. This has been gone over by others more competent than I. Nor have I mentioned placing tin and gold at the cervical borders under gold—that is also familiar to you all. I would warn the neophyte against building large contours upon gold and tin foundation. Such fillings, in my opinion, need as strong a foundation as it is possible to get.

GUM REPRODUCTION IN INTERPROXIMAL SPACES.*

GEO. T. CARPENTER, M. D., D. D. S., CHICAGO, ILL.

The first thing to do is to get the etiology of the case in hand and make a careful diagnosis, and remember that reproduction should not be undertaken in the presence of pus. The patient as well as the operator must have a high estimation of the value of gum tissue, and there must be a perfect co-operation in the work. In mild cases when the points of the festoon are destroyed a renewal of the contour of the masticating and proximal surfaces with directions as to the use of the toothpick will be all that is necessary. The word "toothpick" misimplies its use, which should not be to pick, but to push the food from between the teeth. This is easily done by removing the point of the toothpick to a rounded end and flatten the sides so that it will pass

^{*}Extract from Indiana Journal.

easily between the teeth without injury to the gums, and with this push the particles of food from between the teeth to the inside, where it can be easily caught up by the tongue and ejected from the mouth. The wooden toothpick is as good as picks of other materials when shaped in this way. In cases where the interproximal tissue is absent and the gum sags so that the accumulation of foreign material causes more or less irritation. it is necessary to protect the parts. This can be done with shields or hoods made of rubber or metal which will fit closely to the sides of the teeth and reach from the masticating surface of the crown to the gum. In making the hood or shield an impression is taken with modeling compound of each side of the tooth separately, so as to insure a perfect fit at the gum margin, and by using a slight amount of cosmoline on the impression any number of duplicate models can be made from the same impression. The model can be waxed up for rubber or cast metal, or dies made for swaging. The shields or hoods having been made are applied, one on each side of the parts to be protected, and are held in position by platina strips or wire, silk ligatures, or by metallic loop and pin, whichever is best adapted to the required case. The soft parts, where reproduction is required, should be stimulated with a solution of nitrat of silver one dram to aqua one ounce, or nitrat of silver two drams to aqua one ounce, according to the requirements of the tissues, some obstinate cases requiring crystals of silver nitrat fused on an aluminum strip and applied to the parts. This should be done before applying the protecting shields. In cases where the tissue has been entirely destroyed and the process can be felt by examination, and exposed surfaces are tender to thermal changes, a gelatin dressing with silver salts or protargol has been very useful in my hands. Remove all debris and cleanse the parts and insert a wedge-shaped piece of gelatin between the teeth and place the hoods in position. The gelatin will keep the medicament continually in contact and lessen the space for the accumulation of foreign substances. Examinations should be made every day or two and the gelatin renewed if necessary.

In extreme cases where the process between the teeth will not respond to the probe by causing pain or flow of blood, it is ncessary to use the engine and burr and remove the bony tissue until you get a response and are convinced that the parts worked upon are alive, using the strictest antiseptic precautions in all cases, and treat with gelatin dressing as in other cases.

In teeth where dead pulps are present all putrescence should be removed, and when free from tenderness and odor, canals should be filled. The shields or hoods should be worn for some time after the tissue is reproduced so as to protect the newly formed gum, and every care should be used not to injure this tissue by returning to former causes, which result was their loss or destruction.

Interproximal tissues thus treated will stand the ordinary uses of the mouth and will grow better and firmer with use and age.

AN UNUSUAL CASE OF HAEMORRHAGE.*

BY CHAS. A. CLARK, L. D. S.

Cases of hæmorrhage after tooth extraction are in the experience more or less of every dental surgeon, but a case of hæmorrhage where a tooth had failed to be extracted is somewhat unique. But this occurred in my practice quite recently.

Miss D—, aged about 20, came to me to have an abscessed central removed under gas, and if possible also the bicuspid and first molar stumps—upper right. The central was rather firmer than I expected, but after extracting it I attempted to extract the molar stumps, but as they squeezed up on closing the forceps, and as also the patient was recovering from the gas, I desisted; the patient leaving in a few minutes. This was about 12:30. About 7 o'clock in the evening she returned complaining of bleeding. On examining the mouth I found she was bleeding profusely from the gums of the molar stumps that had not been extracted. Ice had been held in the mouth all day, but had failed to check the bleeding, and in fact it was so profuse that while I was searching for the bleeding part the patient's head had to be tilted on to one side to allow the blood to flow out, as otherwise it filled her mouth and gave me no time for examination.

^{*}From Journal British Dental Association.

On removing the clot I found that the bleeding was apparently from the palatal gum, but being unable to check it for a more sure examination, and there being no depth of socket to plug, I pressed on a large piecee of wool soaked with a saturated solution of tannic acid in absolute alcohol and held it in situ with my thumb for a few minutes, pressing firmly. This stopped the bleeding, and placing a thick pad of lint on the wool for the patient to bite on, sent her away until the morning, giving the usual directions about ice and the avoidance of warm food, etc.

On returning in the morning the patient said there had been no recurrence of the bleeding, and I very carefully removed the piece of wool with the tannic acid solution, which disclosed gum of about a quarter of an inch in depth and which had bled—as I had thought—from the entire surface, there being no unusual blood-vessel present. I have since found from the medical man who attends the family that she is a bleeder. I have not extracted those molar stumps.

Does hæmorrhage after tooth extraction more often take place after gas administraiton? I am beginning to think so.

THE SUCCESSFUL DENTIST.

BY E. H. RAYMOND, D. D. S.

In this article in the *International*, Dr. Raymond concludes as follows:

A man's temperament and natural traits of character, coupled with his ability, will determine the class of patients he is to minister to. His individuality has more to do with this than his environment, although the latter is important. If we are to serve the best, we must be the best and give the best. We should be deliberate in our operations, and render our best services in every case.

Be prompt in meeting engagements. A patient's time may be as valuable as an operator's, and the patient has as much right to charge for loss of time, especially if he be a business man. Avoid long sittings, unless absolutely necessary. People will dread the operating-chair if they are unduly fatigued by them. The oper-

ating-room should be the cleanest place on earth, and conspicuous for its healthful atmosphere, and the absence of the smell of drugs.

Never put into the mouth of a patient any instrument that has not been thoroughly cleansed.

Never inject cold or cool water into a sensitive cavity.

Never fill a cavity of decay of any nature without thorough antiseptic treatment.

Never go from one patient to another without washing the hands; and keep the mouth clean and healthy, so as not to be disagreeable to patients.

Never use a napkin or rubber dam that has been in the mouth of another.

Never experiment in the mouths of those who trust us without an understanding beforehand. If we do, and fail, it will drive them away.

Never charge for a failure in any operation. Do it over until successful before rendering a bill. No man is infallible, and every one will occasionally make a mistake. Acknowledge a mistake when made. It will pay better than to try and conceal it. Never warrant an operation. We are dealing with living tissue, which is susceptible to change from many causes. Instruct patients as to the proper food for growing children; also as to the importance of keeping their mouths in condition to eat it.

Have a system for charging for services, and stick to it. The value of skilled labor cannot be measured by money, but it is best to have a system. People will know what to expect when such is the case, and it may save much controversy.

Never solicit patronage, but let the service rendered determine our ability.

Never advertise. It vitiates our ethical code, and savors of quackery.

Be careful not to speak disparagingly of a brother dentist. If he has made mistakes in diagnosis and treatment, endeavor to rectify them, without comment.

Be cheerful at all times in the office, and let the urbanity and polish of the gentleman shine out on all occasions. Keep in touch with the brethren, and strive to contribute something towards professional advancement.

FUNGOID PULP.*

BY WALTER W. BARTON, D. D. S.

On January 10, John D., aged eleven years, presented himself in the clinic for the purpose of having his upper anterior teeth regulated. Upon examination it was found that all of his six-year molars were badly decayed. The upper left first molar had a large cavity on the morsal surface which was almost completely filled with a red, spongy tissue, which had no connection to the lateral walls of the tooth, and was diagnosed as fungoid pulp. This was caused by exposure of the pulp by caries, and followed by continued irritation, which produced the low form of granulation tissue peculiar to this growth. This was somewhat sensitive, but not to the same degree as a healthy pulp.

The prognosis being favorable, the cavity was washed with a three-percent solution of hydrogen dioxide and crystals of iodine packed around the bulbous mass, but could not be sealed in. The case was treated twice each week, and at the second sitting the pulp was greatly reduced in size. After applying the dam the cavity was again washed with hydrogen dioxide, and iodine crystals were sealed in with gutta-percha and gentle pressure used.

This treatment gave no pain, and at the next sitting all the bulbous portion of the pulp was absorbed. This was followed by two applications of carbolic acid and iodoform, when the pulp-canals were entirely cleansed and a dressing of iodoform and carbolic acid was placed in the canals for a few days. There being no putrescent odor at the end of a week, the canals, which were not closed at the apex, were filled with gutta-percha, the tooth was lined with oxyphosphate, and the remainder of the cavity filled with amalgam.

This treatment extended over a period of three weeks.

^{*}From International Dental Journal.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

PHOSPHORIC ACID FOR HARD SOLDERING.—In place of borax, to make hard solder flow, use the fluid that comes with your phosphate of zinc, and then blow.—J. B. Hodgkin.

FILLING THE HYPODERMIC SYRINGE.—Drop a small piece of absorbent cotton into the fluid to be drawn into the syringe. Press the syringe against the cotton, thus filtering the solution; there will be no specks to stop the syringe and less risk of after-irritation.—Exchange.

VASELIN AS A SEPARATING MEDIUM.—A little vaselin spread over the plaster makes a good parting medium, and washes off clean. Shellac sometimes gets on the teeth or about the pins if much boiling is done, and is troublesome to get off.—J. B. Hodgkin, in Dental Hints.

Vulcanite Trimmer.—The side points of a broken steel pen are very useful for clearing out vulcanite from between the necks of teeth. They are fine enough to enter the narrowest spaces, in which the most delicate cuts can be made with them.—Quarterly Circular.

DECALCIFIED DENTIN.—Permeate the softened dentin with oil of cassia. Dry the surface with chloroform and fill with aristol mixed with chloro-percha. This becomes hard and glossy when the chloroform has evaporated. Finish with cement.—B. H. Teague, Dental Hints.

USE OF ALCOHOL AFTER SULPHURIC ACID IN ROOT TREAT-MENT.—After employing sulphuric acid in root treatment, I frequently use alcohol before the soda solution, pumping it to the end of the canal. This prevents the effervescence from clogging fine canals.—J. M. Walls, Review.

CHLORETONE FOR PYORRHEA ALVEOLARIS.—I have treated twenty cases of pyorrhea with chloretone, packing the crystals

under the free margin of the gums, and all are cured—some with two treatments and some with ten—the time ranging from eight days to five weeks, but usually about twenty days.—J. S. McDonald, Dental Clippings.

Selection of Toothbrushes.—I frequently prescribe a child's toothbrush for the adult mouth. In many instances the toothbrushes are too large and one cannot get around the mouth with them. You cannot reach the back teeth well on either jaw nor the incisors on the lower jaw, particularly on the labial surfaces.—G. W. Haskins, Review.

Bromidin to Prevent Gagging From Impression Taking.—Bromidin, in half teaspoonful doses every four hours for two days before operating, benumbs the sensory nerve tips of the buccal cavity and thus facilitates taking impressions or adjustment of rubber-dam, otherwise impossible because of the annoying gagging peculiar to some individuals.—Va. Med. Semi-Monthly.

TREATMENT OF IRRITATED AND LACERATED GUMS.—I will give you a new formula for soothing irritated and lacerated gums:

- R
 Boro-glycerine
 min. x.

 Resorcin
 gr. x.

 Eau de Botot
 min. v.

 Water (105 F.)
 min. xc.
- M. S. Inject between the gum and root. Have the patient hold this in the mouth for two minutes or longer.—Review.

TREATMENT OF SUPPURATING GUMS.—We often come across teeth in which the nerve has died since the filling was inserted, with an accumulation of pus bursting through the gum; in these cases there can be only one effective treatment, and that is to take out the stopping and treat the root, and I find that a drop of eucalyptus injected into the gum has a splendid effect in bringing the surrounding tissues into a healthy condition.—Journal British Association.

Piercing Saw Blades.—In fixing Piercing Saw Blades in the Frame, care should be taken to have the teeth pointing towards the handle, not away from it. Many users complain that the quality is not up to standard if the blades break or wear away too

quickly; they are not aware that breakage and poor service are due, in most cases, to the fact that the blades are put in the frame the wrong way, i. e., with the teeth pointing away from the handle.—Quarterly Circular.

INDURATED ABSCESS.—We find, at times, that an alveolar abscess assumes the condition of induration or hardness, instead of the flabby, softened puffiness most generally seen in this disease before it bursts and forms the external fistula. These have been successfully treated with iodine. A paste made of chalk, combined with a little carbolic acid and glycerine, to which crystals of iodine are added and introduced into the root canals. The rubber-dam should be adjusted before the paste is filled into the root. Two or three treatments of this kind, mixing the paste fresh each time, will generally result in getting rid of the induration.—Office and Laboratory.

REPAIR OF BROKEN PORCELAIN FACINGS.—Mr. Gaddes showed two methods of repairing a fractured porcelain facing on a fixed crown or bridge. In the one instance holes are drilled in the situation of the pins in the old backing, and these are converted into two vertical slots coming out at the cutting edge. The pins of the new tooth pass down these slots; and a new backing, pierced for the pins, is burnished over the lingual surface of the old back, the pins bent over with pliers, removed, and soldered. In the second method the old pins are retained, and their heads serve to hold the new tooth. This tooth is backed with thin gold, the pins riveted, soldered, and filed flat. A piece of plate with two slots corresponding to the old pins passes between their heads and the old back. This is thickened by additional plate all over, except where the pin heads occupy the margins of the slots. The plate is trimmed down to be just flush with the pin heads, and so as to permit the backed tooth to lie flat upon it when in place. To this retaining plate the tooth is soldered, both laterally and near the cutting edge. The "repair" is slipped into position and fixed with thin cement. The examples which were exhibited clearly indicated the several stages of the work.—Journal British Dental Association.

NEW PUBLICATIONS.

Principles and Practice of Filling Teeth.—By C. N. Johnson, M. A., L. D. S., D. D. S., Professor of Operative Dentistry in the Chicago College of Dental Surgery. Philadelphia: S. S. White Dental Mnfg. Co., Pub. 1900. Price net \$2.50.

This book is a gem; the best work yet published on the subject.

Beginning with "Deposits on the Teeth," the author has taken up the subject progressively and methodically, treating thoroughly each phase, employing many illustrations to show details.

The chapters on "The Classification and Preparation of Cavities," "The Introduction, Condensation and Finishing of Gold Fillings in the Different Classes of Cavities," and "Management of Children's Teeth," are especially noteworthy, although the whole subject is treated in a masterly manner, leaving little to be desired.

Those acquainted with Dr. Johnson know how thoroughly conscientious he is in everything, and it has been with this painstaking care that the book has been prepared. No deutist can read and study it without gaining much valuable information. The book should be in the library of every dentist.

A PRACTICAL TREATISE ON ARTIFICIAL CROWN AND BRIDGE-WORK AND PORCELAIN DENTAL ART.—By George Evans. Sixth edition, revised. Philadelphia: The S. S. White Dental Mfg. Co., Publishers, 1900. Price \$3.00.

Everybody is familiar with this work, and it seems unnecessary to more than mention the appearance of a new edition. It has stood alone in this special field and gained great popularity.

The author assures us that in this sixth edition many changes have been made in the text by the elimination of old matter and the introduction of new in the description of methods and details of construction. Some special methods of little general service in crown and bridge-work are still presented, because they may occasionally furnish suggestions for construction by which some existing obstacle or difficulty can be readily overcome.

On account of the advances in porcelain inlay and bridge-work having been so conspicuous during the past year or two, the author has deemed it advisable, in order that they may be properly presented, to give them a distinct classification under the title, "Porcelain Dental Art."

A number of new illustrations have been added to this edition and some thirty pages more of text.

The American Text-Book of Operative Dentistry.—In contributions by eminent American authorities. Edited by Edward C. Kirk, D. D. S., Professor of Clinical Dentistry, University of Pennsylvania, Department of Dentistry. New (2d) edition. In one very handsome octavo volume of 857 pages, with 897 engravings. Cloth, \$6.00, net; leather, \$7.00, net. Lea Brothers & Co., Publishers, Philadelphia and New York, 1900.

This work is the accepted text-book on operative dentistry, and the demand for the first edition by both students and practitioners has shown the value placed upon the book.

This, second, edition has of necessity been enlarged and many new illustrations added. Among the additions to the book may be mentioned a chapter on "Dental Histology," by Dr. Noyes, a chapter on "Antisepsis in Dentistry," by Dr. Truman, the chapter on "Porcelain Inlay Work" having been rewritten in the light of the most recent developments of this rapidly progressing field of study, and the other subjects have been thoroughly revised and brought into harmony with the latest development of thought along the various lines.

The book includes everything that comes within the limits of operative procedure, and is one that every dentist can profit by.

The editor and collaborators are to be congratulated on the thorough instruction given in the text.

TREATMENT OF MALOCCLUSION OF THE TEETH AND FRACTURES OF THE MAXILLAE, ANGLE'S SYSTEM.—By Edward H. Angle, M. D., D. D. S. Sixth edition, greatly enlarged and entirely rewritten, with 299 illustrations. Philadelphia: The S. S. White Dental Mfg. Co., Publishers, 1900. Price \$4.00, net.

With this edition one might say that Dr. Angle has given us a new book. It is so much enlarged and improved that it has little resemblance to the former pamphlet editions. This, the author states, is intended as a culmination of his labor in this line, and inspection of the text shows that he has done his work well and covered the subject admirably.

The principal subjects considered are: Occlusion; Facial Art, Line of Harmony; Etiology of Malocclusion; Classification and Diagnosis of Malocclusion; Alveolus and Peridential Membrane; Models, Their Construction; Regulating Appliances; The Author's Appliances; Soldering; Anchorage; Combinations of Appliances; Retention; Tissue Changes Incident to Tooth Movement; Operative Surgery; Physiological Changes Subsequent to Tooth Movement; Age Appropriate for Treatment; Treatment of Cases; Technic; General Suggestions; Fractures of the Maxillae and their Treatment.

A practical book, well written and illustrated, that should be possessed by every dentist who attempts operations in this line.

STUDENTS' EDITION, A PRACTICAL TREATISE OF MATERIA MEDICA AND THERAPEUTICS, WITH SPECIAL REFERENCE TO THE CLINICAL APPLICATION OF DRUGS.—By John V. Shoemaker, M. D., L. L. D., Professor of Materia Medica, Pharmacology, Therapeutics, and Clinical Medicine and Clinical Professor of Diseases of the Skin in the Medico-Chirurgical College of Philadelphia; Physician to the Medico-Chirurgical Hospital; Member of the American Medical Association, of the Pennsylvania and Minnesota State Medical Societies, the American Academy of Medicine, the British Medical Association; Fellow of the Medical Society of London, etc., etc. Fifth edition, thoroughly enlarged; 6¼x9½ inches; pages vii-770. Extra cloth, \$4.00, net; sheep, \$4.75, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia.

This is essentially a book for students having been prepared especially for this purpose. The author states that his experience in the class-room has led him to make a change in the scope of the fifth edition. So many new remedies from the chemical laboratory and from the vegetable kingdom have been introduced during recent years that he has decided to divide the work into two independent issues, one (the present) to be known as the "Students' Edition," and the other, which will be forthcoming shortly, as the "Physicians' Edition."

It is incumbent upon the student to become acquainted with the official remedies and preparations, and in the present edition nothing is included beyond the description of those drugs and preparations which are official in the pharmacopeias of the United States and Great Britain, together with some of their chemical modifications. The doses in the text are all given in the decimal terms, together with their equivalents in the English system. The text has been thoroughly revised and represents the result of the latest researches in this important department of medicine.

The book is well arranged and the important subjects are printed in heavier type, so as to at once catch the eye. It is an admirable work on this subject, and those who purchase it will make no mistake.

SOCIETY.

THE TRI-STATE DENTAL MEETING

The joint meeting under the auspices of the State Societies of Michigan, Ohio, and Indiana will occur at Indianapolis, June 4, 5, 6, 1901.

WISCONSIN STATE BOARD DENTAL EXAMINERS.

The next meeting of this Board for examinations will be held at Hotel Pfister, Milwaukee, on Tuesday, January 15th, 1901, commencing at 9 a. m. All examinations are conducted in the English language in writing. A practical demonstration is also required, and applicants must furnish their own instruments and patients.

W. H. Carson, Secretary, 609 Goldsmith Building, Milwaukee.

OHIO STATE DENTAL SOCIETY.

The following officers were elected for the ensuing year: President, H. F. Harvey, Cleveland; First Vice-President, Otto Arnold, Columbus; Second Vice-President, J. B. Beauman, Columbus; Secretary, S. D. Ruggles, Portsmouth; Treasurer, C. I. Keely, Hamilton.

The meeting of this Society, held in December, was one of the best in its history. The papers read were unusually good, and the clinics valuable. The usual number of dentists were in attendance, the exhibits were noteworthy, and altogether the meeting was a big success. Fifteen new members were added to the Society's list.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

GOOD ADVICE.—Our journals should receive the most liberal support of all dentists, as they are far more valuable to the practitioner than any dental books of the regular order.—J. E. Cravens in Kentucky Society.

Men's Teeth and Matrimony.—At Kettering County Court the other day, a boy was awarded 30s. damages for the loss of a tooth. The loss would probably impair the boy's matrimonial prospects, sympathetic Judge Snagge humorously remarked.—British Journal.

School for Disinfection.—A school in connection with the Hygienic Institute of the University of Breslau, and under the direction of Prof. Fluegge of that institution, is to be established, by order of the Prussian Minister of Education, for the thorough and practical teaching of disinfection in all its branches.—Med. Zeigj.

ETHICS, BUT NO CODE.—It always seems to me that a codified law is a degradation to the profession. It is an admission to the rest of the world that dentists would not know how to behave themselves unless it were put down in black and white. If I had my way about it the ethics of the society would be very much in line with what one of the other members said, "The Golden Rule," or as I have seen in some of the societies in the South, "All members of this society shall be gentlemen."—R. Ottolengui in Items.

An American Diploma.—At a recent inquest, says the *British Dental Journal*, at Birkenhead, Dr. Sleavin, U. S. A., told the coroner that he could not explain how it was that Liverpool directory described him as a physician; it was not done with his authority. Amongst several other documents which he produced was a framed Latin "diploma" issued by the Buffalo (Ohio, U. S. A.) University of Medicine. He could not translate it, although he said he wrote all his prescriptions in Latin. He had never been in the United States, but was examined at the residence of

the legal representative in England of the Buffalo college. [Buffalo, Ohio, is news to us, for there is no such town in the State, nor could such an accusation apply to the Buffalo, N. Y., University. Here seems to be an opportunity for the authorities to obtain information regarding fraudulent American diplomas.—Ep.]

THE WAY THEY DID IT AT THE INTERNATIONAL CONGRESS, PARIS.—I obtained eight Americans to go to the Hall of Savants to hear a paper by Dr. John F. Dowsley, of Boston, on "Dental Education," as that was what I was interested in. And before I went I promised Dr. Dowsley that I would obtain all the American gentlemen I could to come and discuss that paper, so that when it was published it would receive a good notice in the English translation. Dr. Dowsley read his paper. There was a president, four vice-presidents, two secretaries, three interpreters, and three other gentlemen. I never could find out what they had to do with the meeting, but they were there nevertheless; they were all strung along the table in a semi-circle. When Dr. Dowsley got through reading his paper we were all on the qui vive to get up and speak our little speeches on the paper. The president said something, and some one in the audience said something in French, and the first vice-president said something, and the second vice-president said something and the third vice-president said something, and the secretary also and the interpreters, and two in the audience got going, and they had a regular row there it seemed to me. Well, suddenly it all stopped and another man got up and read a paper in French, so Dr. Dowsley was dismissed, and we had no show whatever. So I went out, and Dr. Irwin, and three or four of the American gentlemen who were there, went also.—Dr. Meeker in Items.

A WARM Essay.—In a little country school not far from Princeton literary exercises are regularly indulged in every Friday afternoon during the term. A 12-year-old boy read an original essay on "The Newspaper." This latter day youthful Solomon treats his subject thusly: "Newspapers are sheets of paper on which stuff to read is printed. The men look over the paper to see if their names is in it and the women use it to put on shelves and sich. I don't know how newspapers came into the world. I don't think God does. The Bible says nothing about editors and I never heard of one being in heaven. I guess the editors is the missing link them fellers talk about. The first editor I ever heard of was the fellow who wrote up the flood. He has been here ever since. Some editors belong to church and some try to raise whiskers. All of them raise hell in their neighborhood and all of them are liars, at least all I know, and I only know one. Editors never die. At least I never saw a dead one. Sometimes the paper dies and then people feel glad, but some one starts it up again. Editors never went to school because editors never got licked. Our paper is a mighty poor one, but we take it so ma can use it on our pantry shelves. Our editor don't amount to much, but paw says he had a poor chance when he was a boy. He goes without underclothes in winter, wears no socks and has a wife to support him. Paw hasn't paid his subscription in five years and don't intend to."-Princeton Record.

OBITUARY.

JOHN EDWARD ROBIE.

Col. John E. Robie died at his home in The Berkeley, Saturday, November 24, 1899. He had been prostrated by a paralytic stroke on November 14, which was the direct cause of his death.

Col. Robie was born in Auburn, N. Y., October, 1846, and shortly afterwards moved to Buffalo, N. Y. He received his education in the Buffalo public schools, and when he reached manhood entered the employ of the Buffalo Dental Manufacturing Co., as book-keeper. For many years he was treasurer of the Buffalo Dental Manufacturing Co., and as such was known to all the dealers in dentists' supplies, besides having an extensive acquaintance among dentists in all parts of the country.

In 1871 Col. Robie joined the Sixty-fifth Regiment, N. G. S. N. Y., and for eighteen years was connected with the organization. He rose successively through all the non-commissioned and commissioned ranks until he became lieutenant-colonel of the regiment. He held that rank for several years previous to his retirement in 1899. He did much toward the development of the regiment as it is to-day, being a capable officer and a man keenly alive to the needs of the National Guard.

In 1894 Col. Robie married Miss Harriette N. Lovejoy, who survives him. Col. Robie was a most genial, whole-souled man, with a happy faculty of making and keeping friends. His death will be regretted by all his social and business acquaintances.

C. H. HUBBARD.

Mr. C. H. Hubbard, who has for years been one of the leading dental dealers of Canada, died November 16th, at the residence of his son-in-law. Dr. Beattie Nesbitt, 71 Grosvenor street, Toronto.

OHIO DENTAL JOURNAL.

VOL. XXI.

FEBRUARY, 1901.

No. 2.

CONTRIBUTIONS.

A MESIO-OCCLUSAL CAVITY IN AN UPPER FIRST PERMANENT MOLAR.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

The reason for selecting such a title for this paper is traceable to a request of your President that the author give a clinic upon this kind of a cavity, and then outline to the Society the methods employed in the operation, together with a detailed statement of the reasons for each step in the procedure. It will be understood at the outset that the methods herein advocated, and the suggestions made in connection with the subject, apply as well to other proximo-occlusal cavities in molars and bicuspids, as to the one under consideration—in so far, at least, as they are subjected to the same conditions.

When a cavity like this presents itself, there are several problems for the operator to consider. He must have sufficient separation between the molar and bicuspid to permit of so contouring the filling that the teeth are held sufficiently apart to maintain the interproximal space in its normal width and form,

^{*}Read at the meeting of the Ohio State Dental Society, Columbus, Ohio, December 5th, 1900.

to the end that the gum tissue may occupy the space in a healthy condition.

If the teeth are allowed to drop too close together so that the space is perceptibly narrowed, the gum tissue is strangled out of its normal relation to the teeth, and the space left unhealthy. A case like this will present itself with the gum festoon on either side of the space standing farther crownwise than normal, and in a swollen, hypertrophied condition so as to bleed on the slightest touch. The normal form of the gum in the interproximal space is arched, with the crest of the arch reaching near the contact points on the proximal surfaces of the teeth, and sloping away from this buccally and lingually to blend with the buccal and lingual gum tissue. In case of an obliterated interproximal space, the arch of the gum is inverted so that the buccal and lingual festoons of gum stand farther crownwise than the gum immediately between the teeth-thus forming a pocket for the lodgment and retention of food between the proximal surfaces of the teeth. In the normally arched form of the gum the tendency is invariably for food which may have been forced between the teeth to be carried away out of the space along the sloping surfaces of the gum, but when this arched form is destroyed and a pocket created, each impact of mastication merely wedges the particles of food more firmly between the teeth. This is particularly true of fibrous food, and the fibers thus held in contact with the surfaces of the teeth readily decompose and bring about decay, either in surfaces previously sound or as a recurrence of decay around fillings.

Not only this, but the constant irritation induces disease of the gum tissue and peridental membrane, sometimes even leading to the formation of a pus-pocket between the teeth, with all the characteristics of pyorrhea. No operation upon these proximal surfaces should be considered perfect which does not involve the most careful attention to the form of the interproximal space and the condition of the gum tissue in it.

The next consideration in the management of these cases relates to the outline of the cavity margins. In studying the history of caries on these proximal surfaces, it will be found that there is a certain area which is exceedingly liable to decay.

This area is located in the vicinity of the contact point, and it is in this region that caries usually makes its initial attack. The farther we get away from this point buccally and lingually, the less the liability to decay, and in establishing the cavity margins this fact should be borne in mind. If a permanent operation is designed, the cavity should be so extended bucco-lingually as to carry the line between filling and enamel to a point of safety. This point of safety is reached only when the margins of the filling are so situated that they are constantly kept clean by the wiping of food over them in the process of mastication, or by the friction of the cheeks or tongue against them. The exact degree of extension necessary to accomplish this may readily be determined by the observant operator in each individual case presented, by carefully noting the conformation of the tooth to be filled and the one adjacent to it. A cavity in a molar facing the surface of a bicuspid will not require the same degree of extension that would be necessary if the cavity faced the broad proximal surface of a molar, on account of the more rounded contour of the bicuspid and the lesser width of the tooth buccolingually. Each case must be studied in the light of its special requirements, and the marginal outline established in accordance with the existing indications.

The extension of the cavity rootwise at the gingival margin is also a question calling for careful consideration. It may be laid down as an axiom that wherever the gingival margin of a filling on a proximal surface extends under the free margin of the gum, so that the gum tissue in occupying the interproximal space covers a portion of the filling, the margin so covered is absolutely safe from a recurrence of decay, provided the filling is properly inserted and the gum tissue healthy. This would seem to argue strongly for such an extension of the cavity as to ensure this kind of protection to the filling, and unless there is some special reason against it, the cavity should be so formed. This may appear like very radical teaching, but a careful study of the conditions will reveal the fact that it is not so radical as it seems. In those cases where the gum extends normally intothe interproximal space, it will require but a very slight extension of the gingival margin to carry it well under the gum, and

in fact in most cases the decay has already carried it there. In other instances the cavity is found to dip down rootwise into the dentin at this point, leaving the enamel standing. This edge of enamel should never be allowed to remain in any event, and its removal will almost invariably carry the gingival margin safely under the gum. But in those cases where there has been an extensive and permanent recession of the gum, so that there is an appreciable distance between the decayed cavity and the gum margin, it would be folly to attempt to cut through sound tissue to the extent of two or three millimeters, for the purpose of carrying the filling under the remaining gum. It is a question of judgment with this, as with other matters calling for discrimination in different cases, but the principle of protection to the gingival margin of the filling should never be lost sight of.

One of the chief considerations connected with this kind of cavity relates to the form that shall be given it for the most secure retention of the filling. When the aggregate impact brought to bear upon such a filling in mastication is carefully considered, it will be apparent that in order to anchor it securely against displacement, the cavity must be formed upon scientific principles and according to mechanical rules. Few dentists really stop to consider the exact nature of the service their fillings are likely to be called upon to perform. It has been somewhat conservatively estimated that during the mastication of an ordinary dinner the jaws are brought into occlusion at least one thousand times. The force of these occlusions may vary in different mouths, and also according to the character of the food, but to penetrate an ordinary piece of beefsteak with the teeth will require-according to Dr. Black-at least sixty pounds pressure. Supposing only one-fourth of the entire number of occlusions chance to fall upon the filled tooth, it will readily be seen that the aggregate number of impacts against the filling in the course of a year will be something enormous. There are, of course, many fillings in which the relation of the cusps of the opposing tooth is such that very little direct impact is brought to bear upon them, and almost any kind of anchorage will be sufficient to hold the fillings in place. It is just such cases as these that mislead many operators into a false security as to the

character of anchorage necessary to retain fillings against displacement.

In every instance where an opposing cusp impinges directly against the filling, as is usually the case with a normal occlusion, the cavity must be so formed as to retain the filling against severe usage, extending over a number of years. To accomplish this, due consideration must be had for mechanical principles. The portions of the cavity against which the filling is driven under the impact of mastication should be made flat instead of concave, and should be formed as nearly as possible at direct right-angles to the force of occlusion. To this end the gingival wall should be horizontal from buccal to lingual, and from the gingival enamel margin to the axial wall. If any deviation is made from this, it should be to dip it slightly rootwise, as it approaches the axial wall, giving it a dovetailed effect to lock the filling more securely into place. The anchorage step on the occlusal surface should also be formed with a flat base, which should join the surrounding walls of the step at right-angles. This flattening of those walls of the cavity which are to receive the principal impact adds very materially to the stability of the filling under stress, and prevents tipping or rocking of the filling while it is being built.

The formation of angles to join the walls of the cavity is also an element of security. The gingival wall should join the axial wall at a direct right angle, and there should be a point angle at the gingivo-axio-buccal and gingivo-axio-lingual corners of the cavity. This point angel should be extended into a line angle between the axial and buccal and the axial and lingual walls, as far toward the occlusal as can be done without undermining the cusps. No angles should be made along the marginal outline of the cavity. The gingival enamel margin should be flat buccolingually, and the buccal and lingual margins as nearly perpendicular as possible, but the gingival enamel margin should be made to join the buccal and lingual margins, not at an angle, but on a short curve. This is true of all marginal outlines.

The formation of angles in the interior of cavities has been criticised for two reasons. First, because of the supposed difficulty of adapting filling materials into angles, and, second, be-

cause of the fear of weakening the tooth. The claim has been made that a fracture will occur more readily at an angle than at any other point, and that the formation of angles between walls invite the fracture of the tooth-tissue at these points.

Let us examine the first of these claims. Is it true that angles are difficult to fill? A verdict based on years of practical experience by any operator who is observant will go to prove that so far as facility in building up a filling is concerned, the cavity which is formed of flat walls joined by angles is infinitely easier than a cavity formed of concave walls joined by curves. The flat-walled cavity with angles presents such a surface for the filling material to rest against that there is a sense of security in building the filling that never obtains where the condensation is against curved walls. As has already been intimated, there is little or no danger of the filling rocking under the impact of the plugger, as is so often seen when the walls are curved. The operator is not obliged to constantly watch his filling and retain it against tipping while condensing it, and the work may, therefore, be carried along more rapidly and with less tax on the operator. As to the possibility of gaining perfect adaptation of gold into the sharpest right-angle, there is no longer the slightest fraction of doubt. It has been demonstrated too many times to admit of argument. The only requisite is to have plugger points of the proper form, and then exert the force upon the gold in the right direction. The fact that gold will remain in position when driven into an angle more certainly than when driven into a groove or curve renders the operation much simpler where angles are formed, and a practical test of this matter will convince the sturdiest doubter.

As to the other question of the weakening effect upon the tooth by the formation of angles. Granted that in a general way a body will break more readily at an angle than at any other point, how many have seen teeth fracture along the lines where it is recommended that angles shall be formed in these cavities? The essayist has been a somewhat close observer of fractured walls of cavities, and he confesses that he has never yet found one located at these points. The place where the sharpest angle is suggested lies at the juncture of the gingival

with the axial wall. Who has ever seen a tooth break here? Another point is where the axial wall joins the buccal and lingual walls, and instantly we may expect to hear a chorus go up to the effect that this is the very place where we repeatedly see fractures. On the contrary, I have never yet seen a single instance where a buccal or lingual wall has broken off along the line between it and the axial wall. I have noted very many cases where portions of these walls have burst away from a filling, usually leaving a more or less concentric fracture, the deepest portion of which does not, however, reach to the axial wall. The reasons for these fractures lie in an entirely different direction. They are usually caused by too deep grooving of the buccal or lingual wall, resulting in a thin edge to the enamel, which, not being supported by dentin, is readily fractured. Any spreading of the filling material under repeated impact in mastication may cause a bursting out of these thin edges, but the break seldom extends to the juncture of the broken wall with the axial wall, and it never passes any distance longitudinally along the line between these walls.

Another place where an angle is suggested is along the juncture of the base of the step with the surrounding walls of the step, and it would seem that occasionally a cusp might be lost as the result—particularly on an upper bicuspid. But a close observation of the condition of fractured bicuspids would appear to indicate that a break almost never occurs along this line. This entire subject of split and broken bicuspids is one of sufficient importance to demand a paper in itself, and it is worthy the most careful study of every practitioner, both with relation to the causes which bring about these fractures, and the means to be taken for their prevention.

But in the consideration of the present subject it must suffice to state that no danger of fracture need be feared from making an angle at the point indicated in a mesio-occlusal cavity in an upper molar. In short, it may be said that the principle of forming these cavities with flat walls joined by angles is a menace neither to the tooth nor the filling, but rather an element of safety to both, in the fact that a filling so placed is secure against movement under stress, and will not so readily leak or shift its position, and cause undue impingement upon a vulnerable wall of the cavity. The more securely we can lock our fillings into place, the more certain we may feel of permanent results.

As to the further details of cavity preparation—the form to be given the enamel margins, the instruments to be used, and the technique of the operation—the limits of the present paper will not permit us to consider. But before closing the subject, the statement should be made that no operator must feel discouraged if his attempt to perform these operations according to the principles laid down does not always meet with success. In every-day practice we encounter obstacles to the performance of ideal work, and we cannot close our eves to these obstacles. Some of them are too forceful to be ignored, and vet the danger with many operators is that a few obstacles are allowed to influence their entire line of practice, and that which should be the exception is turned into the rule. In other words, the first case that presents itself for our attention when we go back to our offices may prove to be one in which it is manifestly impossible for us to make an ideal preparation of the cavity through excessive sensitiveness of the tooth or nervousness of the patient. Too many operators under such a circumstance as this will simply throw up their hands and say that ideal cavity preparation is a myth, and not to be thought of in practical work. It is so convenient to stop short of perfection on the slightest provocation, and ease our conscience with the evidence of an exceptional case or two. This is all wrong, and it has a lowering effect on the profession. Our aim should be always to have the ideal before us and work faithfully and consistently toward that ideal. If we do this, our possibilities for attaining the ideal will widen perceptibly as we proceed, and in the end the cases in which we fail to reach the ideal will prove the exception rather than the rule. If all operators would approach their work in this spirit, it would place operative dentistry on a more serviceable basis, and result in a greatly improved class of work being accomplished for our patients. If this were done, we should no longer hear the intimation made by thoughtful men that the attempt to save decayed teeth by filling was in a large sense a failure. Some men in the profession

have proved beyond the shadow of a doubt that the filling of teeth may be made successful, and what some men have done others can do, if they make the right kind of effort.

DISCUSSION.

DR. CALLAHAN: In reading Dr. Johnson's paper, the slow and very gradual growth of every branch of science is brought to my mind. Take for illustration, the development of the cause of fermentation. Leuenhoek in 1680 saw in yeast "minute globular particles." About 158 years later (1838) Schwann, by means of improved microscopes and technic, discovered that these globules were "membraneous bags" which exhibited all the characteristics of "vegetable cells" and thereby brought to light the secret of fermentation; but his work was not generally accepted until Pasteur twenty years later proved among many other things that Schwann was right. We may, therefore, say that scientists, even after having been set on the right track, were about one hundred and seventy-eight years working out this theory.

During the first century before Christ it was believed that certain diseases were produced by some invisible living element. In the year 1838 Bassi discovered that a fatal disease of the silkworm was produced by a mold fungus, and up to the time and work of Koch we gradually learned of the parasitic nature of a large number of diseases. About this time Dr. Miller gave us a rational theory of the acid and conditions which produced the decay of the tooth. As compared to these and other branches of science the art and science of filling teeth has been of rapid growth. From, to me, an unknown date lead, tin and gold have been packed by hand into tooth cavities to answer the purpose of stopping. In 1838 Dr. Merritt, of Pittsburg, used a hand mallet to condense gold after it had been inserted in place. In 1854 Dr. Robert Arthur called attention to the cohesive properties of gold foil. In 1860 Dr. W. H. Atkinson introduced the hand mallet for packing cohesive gold; this followed closely by Dr. C. R. Butler and others with improved instruments. In 1867 Dr. Bonwill, taking his cue from a telegraph sounder, constructed the electromagnetic mallet.

It took the dentist hundreds of years, perhaps, to get up to the cohesive gold foil. It took twenty-two years to find what the hand mallet was good for. Then seven years later the electric mallet appears upon the scene, to be soon almost superseded by various forms of rapid mechanical mallets. By these rapid strides, with the aid of rubber dams, we are enabled to construct our beautiful and useful contour gold fillings. And now coming a few years later we are beginning to do the surgical part of the operation with some degree of skill and precision. Like other branches of our work, cavity preparation has evoluted from no preparation to the elaborate scheme set before us by Dr. Johnson. In the beginning of operative dentistry about the only theory of cavity formation was that "The bottom of the cavity should be larger than the orifice." Somewhere about 1838 ideas began to broaden, tooth cavities began to receive more elaborate preparation. Tait's Operative Dentistry, published in 1859, on page 153, we find the following direction for the preparation of anterior proximal cavities in bicupsids and molars: "If all the neighboring teeth stand in contact, separation cannot be accomplished by pressure, they must be in such cases separated wholly with the chisel and file, the interval should be large enough to enable the operator to manipulate with facility and see directly as possible into the cavity."

In the formation of these cavities the cervical wall snould be made to incline slightly inward and the lateral walls, if the tooth will bear the loss, made at least parallel with each other, but if that would impair its strength, groves or pits may be made upon them for this purpose. In 1877 while I for a short time was a pupil of Marshall Webb, removal of buccal and lingual walls to keep enamel margins free from contact with adjoining teeth, cutting of lingual wall below gum line and the beveling of margins were taught me.

As for the introduction of gold into a cavity we have not advanced one whit since 1877 and 1878. We, it seems to me, have reached the limits in cavity formation. With the publication of Dr. Johnson's book on filling the teeth, in 1900, or, in other words, cavity formation, comes twenty-three years later in the climax of gold building.

If you have followed Dr. Johnson carefully you will notice that he is decidedly conservative. He does not intimate that there is but one way or one set of details to be followed to properly prepare every cavity. He says, practically, let us see the cavity, study conditions and environments first, then keeping this ideal, if you please, in mind, proceed to the preparation of the cavity in the light of this, the condensed experience of the best operators of the world.

An ideal cavity as pictured to us to-day means a "standard or model of perfection." Lecky says, "If you know the ideal of a man you have obtained a true key to his nature." I think the same is true of all departments of a man's life.

Solomon says: "A wise man will hear and will increase in learning." Now, Mr. Practical says, "What's the need of this so-called ideal formation for me, why and wherefore?" The investigations of the most thoughtful and accomplished dentists show that decay is not likely to occur or recur on self-cleansing surfaces, therefore extend labial and lingual cavity borders to self-cleansing points. The same observation shows that decay is not likely to occur under healthy gum tissue, therefore extend gingival borders to obtain the benefit of this protection. Observation shows the proof that most fillings are exposed to heavier stress than they are able to withstand; therefore as broad and flat a foundation at gingival and occlusal walls as possible would, it seems to me, appeal to a tyro.

Dr. Johnson called attention to proper separation. You all know that full and free separation has been taught for many years, yet what per cent, of the mass of dentists do you suppose take the time to separate teeth properly. Not over twenty-five per cent, you will say. The other seventy-five per cent, belongs to the class of 1859, sixty years behind. How many of us trim away the bucco-lingual walls to the safety line? Not over ten per cent. The other ninety per cent, belong to the class of 1870, thirty years behind. Whether these estimates are correct or not, we do know that every day we see fillings the proximate walls of which are flat as boards, with decayed and broken down margins to such an extent that it makes one wonder that an intelligent public will tolerate such an imposition. We make a great effort

to formulate and enact laws to regulate those about to enter our profession. It oftentimes strikes me that a law might be constructed and put into force that would do more for suffering humanity by operating internally rather than externally as in the legal profession members of the bar who through professional misdemeanor lay themselves liable to disbarment.

How many of us make an honest effort to get a flat resisting wall, gingival border? I cannot believe a sober dentist would deny the desirability of such a foundation; if there is, we will have to put him in the class of 1784 along with the French gentlemen who came to New York to practice dentistry. I must admit that at times I have been guilty of slighting the gingival wall. In the early days of my practice I depended entirely too much upon pits and grooves. Under the teachings of Black I moved up a step and a mighty important step it was, too. It took me a long time to get rid of the grooving and pitting of this wall, but with the assistance of the proper use of cement and improved instruments, a flat gingival wall has become a fixed habit. I believe with the essavist that the gingival, axial and lateral walls should meet at sharp angles. The retaining grooves in the lateral walls have been and are to-day a source of annoyance to me for altogether too frequently I find myself making these grooves about twice the depth they should be. In the beveling and smoothing of enamel borders a sharp chisel is, of course, indispensable, but a round bur is oftentimes of great assistance. In this connection I beg to call your attention to the Ivory bur. For this purpose, to my eye, the small blades on this bur look as if they would leave the enamel surface rough, but an examination of the enamel borders under a glass will show them to be much smoother and even than after the use of an ordinary sprial blade bur; they do not chip enamel to the same extent. In every respect I agree with Dr. Johnson on the subject as presented in his paper. For a number of years I have been reading what he has had to say on the subject of filling teeth. To have him with us to-day is to me a great pleasure.

DR. HARVEY: I regret we have not seen Dr. Johnson's operation so we might discuss that in connection with the paper, as I had anticipated. He first gives us reasons for presenting this

paper, which I hope is not in the nature of an apology, for it is one that interests us and is of great importance to us. In the beginning of preparation of cavity the first important thing spoken of is the necessary space between proximate teeth. The object, as I take it, in the preparation of these cavities, in fact all cavities, is the insertion of a filling of some material which would restore tooth to a typical form, and the preservation of its usefulness. It may not always be necessary, however, to gain this space previous to preparation of cavity, we all recognize the reasons, but we should never proceed with filling until we have gained sufficient space. Dr. Johnson has given all the reasons why this should be done. I should like to emphasize that proceeding. He next takes up the subject of cavity margins. Not having seen the operation of preparation of cavity, we have not a definite object to discuss, but it is fair to presume that the large percentage or quite a percentage of the cavities occurring in this locality, when they become mesio-occusal, are quite extensive, and in speaking of these cavities I will assume it is a large cavity. If it is such, then I will agree entirely with Dr. Johnson's description and method of preparing outline, that is to be carried beyond the contact point with protruding teeth and also cutting away any frail gingival wall and paring it away below gum. But if these cavities are not so large and especially in the younger patients I should hesitate to cut that cavity very much beyond the point where I get good, secure, solid walls against which to build the gold and I would take my chance in putting in filling that would at least last long enough before another operation was necessary as to warrant the operation. I should expect the conditions to be more favorable in the older person.

Dr. Johnson is not radical in his ideas on this point because he has given us a good deal of margin to use our judgment. He next refers more particularly to the form of the interior of cavity for the purpose of retaining filling. I would presume from his description of the operation he would make here he would start filling either with soft gold or at least an annealed gold and finish with cohesive. If that is his method, I should agree entirely with his formation, thinking that these point angles are very much better than grooves or pits. Point angles need not be extended

to undermine the enamel and need not go higher than the step formation for the retention. However, if these cavities are brought bucco-lingually, if for any reason they are shallow from margin to axial wall, either with filling in of cement or naturally, we have a broad extent of surface to cover and if we wish to start with cohesive gold, I would advise to make a pit, I do not mean a large hole, but a small pit to keep the gold from rocking until we can bridge across. These pits should be small, made with drill of small point and should not be deeper than the diameter of pit. There are cases where these are an advantage to enable us to use cohesive foil and to make better start.

The formation of the step for the anchorage is made, of course, on mechanical principles, where we get the greatest strength for holding and anchoring it at the top, for this, of course, there should be undercut or point angles. It is not necessary to extend entirely around the margins, but simply sufficient to retain gold. The doctor also says, make the bucco-lingual walls perpendicular as far as possible. This is very well, as we can condense gold much more certainly to obtain good, strong edge to filling than in any other form. He has left out the beveling of enamel walls. I do not think he means that the walls should be perpendicular clear to the enamel edge; must have bevel sufficient to condense gold to the enamel margin. I am sorry again we have not seen the preparation of this cavity. The great value in the paper presented by Dr. Johnson to me, and all of us, in summing up, is that it gives us an ideal to work forward to, as brought out in the close of his paper. We cannot arrive at good results unless we have an ideal, and the nearer we approach to it the better, but our judgment should always be used as to how far we progress toward that ideal.

Dr. H. T. Smith: Dr. Johnson spoke about the *more* permanent fillings. He is cautious about speaking about permanent fillings. He says extension for prevention is not a permanent operation, hence uses the term "more permanent." I think any experienced practitioner who is a close observer knows the doctrine promulgated by Dr. Black and carried on by Dr. Johnson, is the proper procedure in the preparation of a cavity. No man

who studies dental caries at the chair can admit of any other method. If you study the beginning of decay on the proximate surfaces, it is well known that it is better settled than the etiology of decay in any other locality. That is a broad statement, but I think it is true. Miller demonstrated it. Miller says no acid, no decay; and this acid is due to a simple local affection. In the preparation of that cavity unless you improve the environment, unless you prevent the possibility of the development of an acid. you have not done much good, and since the teeth are nearly always vulnerable at certain points and usually the same points, if you do not improve this condition you do not do much good. Dr. Wright insists that even though we do this it does not necessarily make it a permanent filling, nor does it. It is the idiosyncrasy of the individual or the secretion of saliva which causes the decay. Dr. Stephan made a statement which is important, I think, in reference to contour of the teeth, insisting upon proper contour. He said the nearer you brought the tooth to its original shape the better. There are, however, exceptions to this. It may depend upon conditions of surrounding teeth and their contour. Take, for example, if we have a cuboidal molar tooth, the proper shape is more nearly square. We should correct that form; they decay more easily of that form. Horses' teeth are of this shape with large and flat surfaces, but they do not decay, but human teeth of such shape decay very quickly. Now, in such cases we do not want to restore the original form, but improve upon it; that is one reason we want extension for prevention. Take again a well rounded bicuspid and, if restored to its original shape, it will be the best filling possible, but if you leave flattened surfaces and bring adjoining teeth into close contact with it, the condition is not improved. I do not like to say that operative dentistry is a failure, but it is largely so because we do not prepare our cavities along the proper line, assuming, of course, that the filling is made as good as possible. We want to reduce the failures to a minimum and if you follow out the reasons for so doing, as presented here to-day, you are adopting the right procedure.

DR. RUGGLES: A man without an ideal and a purpose makes very little progress. We must have an ideal in order to get

results. We all know we cannot form each cavity to the ideal mentioned in this paper, but we can nearly do so; we can at least restore proximate contact, if it is advisable; must, however, try to have that in as near normal position as obtainable, which is near the occlusal surface. In order to do that we must be familiar with dental anatomy to form the lines upon the proper rules and make filling accordingly. Dr. Johnson is a close student of Dr. Black, therefore his principles and also his nomenclature are faultless, and the latter is one of the things in which dentists are as a rule deficient, and they cannot take up a subject for discussion because they do not know the nomenclature. If we could take this paper home and read it, and make ourselves familiar with all the terms, disto buccal, axial, mesio occusal, etc., we would all be better off.

DR. WHITSLAR: About the terms permanent and temporary, I think these are simply relative terms; it depends entirely upon the case at hand, and this requires extreme judgment upon our part; in fact, in the main we may say, judgment is the prime factor in the treatment of diseased teeth. What do we fill teeth for? In the main, for the sake of restoring function of the teeth, and secondly, for the restoring of cosmetic appearances and for cosmetic effects; and we also go further in restoring functions of the teeth in trying to overcome the bad or to better their condition. We also find, in the necessity of getting proper use of the teeth, it is necessary to extend contour of teeth beyond the ideal limits of the contour in order to make them occlude properly. There are many things upon which the success of an operation depends; constitution of patient, and, as Dr. Cassidy yesterday brought out in his paper, the chemistry of the nerves; it also seems that the secretion of the mouth has much to do with decay of the teeth, and these secretions may be affected by disease of the nerves, or may be changed after coming into the mouth. So for these various reasons the terms permanent and temporary can only be relative. I am very much in favor and want to indorse the ideas that Dr. Johnson has given us in regard to extension for prevention; yet these terms also have their limitation, depending upon individual entirely; we must also in

these cases use judgment; that is the first thing and amounts to more than experience. So we see our operations are relative, depending entirely upon the conditions of both the patient and ourselves, the latter also being quite important. We should study the nervous condition of a patient from the moment he steps into the door; in that way we are able many times to perform operations which we would not be able to perform at all without such study. I agree with Dr. Johnson in his modus operandi of the work, and wish to thank him for the clinic given today under such adverse circumstances, and especially for the paper. I think Dr. Johnson's name is now and will go down in the history of dentistry as one who has given vast material for thought in reference to the care of the teeth.

Dr. Taft: As to method suggested, I have no criticism to make any further, perhaps, than that almost everybody can find some fault with everything. It is always better, however, to give every man the benefit of the doubt. One or two suggestions. In regard to the formation of cavities. The angle spoken of by Dr. Johnson's paper today, the angles that may be formed at cervical portions of cavity, buccal and lingual walls. Now that is a very good method and one which I have adopted for a good many years, but it is likely to be abused in some cases; it should not be an acute angle, a right angle is quite sufficient in most cases for introduction and retention of filling. But, as stated in paper today, it may be poorly filled. Many years ago the form of cavity just at this point was accomplished by drilling a little pit or cavity, and serious mischief was often done by making the pit too large, undermining the enamel and weakening the border. Another point, in forming the buccal and lingual

walls of the mesial and distal cavities in incisors, and especially where the large surface approximating is attacked by decay, leaving a comparatively thin wall, he spoke of cutting in towards the central or axial wall. This is practical in many cases, but the novice will many times cut in through the dentin to the enamel, and in all instances the dentin should never be cut through to the enamel. I think you will agree with that. The danger lies in the filling of the cavity. A wrong adjustment of the instrument or plugger will break the enamel wall out. This matter of forming cavities is one of the most delicate parts of the profession; it is comparatively easy to introduce a filling after a cavity is well formed. Judgment should always be used that the cavity be so formed as to allow easy manipulation of gold. This matter of having the cavity always lined with dentin, or rather, refusing to cut away dentin when the enamel would be exposed, is a vital one. Reference was made to the self-cleansing fillings. This is a very important matter. Sometimes these fillings are so introduced that they become loosened in a very short while. Who has not seen such fillings? They do not fall out, but simply become loose and decay takes place around the filling. If a cusp of an occluding tooth strikes down on such a filling, harm is bound to occur.

This matter of contour was another thought brought out. Some one stated we should always restore a tooth to its original form. This is possible if the adjacent teeth are present and tooth is of regular shape, and if irregular teeth have been extracted, leaving the remaining teeth bridging over into the space, larger contour may be necessary. Every case must be examined carefully and filled according to best judgment. A good filling may then be accomplished.

DR. Johnson closes discussion. I have employed so much time already that I do not know where to commence; there are so many things in connection with this subject, I can only cover a few points. First, in regard to obtaining space for operations. The day of torturing our patients with needless separation or wrong methods of separation is passed. We can obtain all the space that is necessary for these operations without subjecting

patient to any pain whatever. But suppose there had been a cavity there and the tooth were in close contact, how would I get space? I would in that case use gutta-percha packed in between; this is ideal for that separation. I want to raise a point of caution against the use of India rubber. The average patient will always come to you with a dread of having teeth separated. India rubber will not remain stationary upon the surface of teeth; it will always creep root-wise and go into the inter-proximal spaces. It is painful and sets up soreness of teeth. If I were the patient I wouldn't have it in my mouth, but I never find this necessary, not within the last fifteen years, but I don't want to become prejudiced against any line of practice. If I should place rubber between teeth I would build a wall of guttapercha from gingival third of cavity against the tooth next in line, so it would form a bridge and prevent the working on the gum tissue. In other cases which come to us we can get the required separation by the use of separator at the time, it is an easy method if used rightly; we must always recognize the force the separator is making and to regulate it with intelligence. In regard to stopping short of extreme extension, why I should go home ashamed of myself if I was supposed to extend of cavities to the extent which I did here this afternoon, in all cases. If there is anything I pride myself on it is good judgment. In a young patient, sixteen years of age, it would be criminal malpractice to extend cavity for anything like a permanent operation. Neither with a nervous boy or girl. There is something infinitely more important than to make a permanent operation in these cases; we should so handle that child as to gain his confidence and not mistreat him, and thus keep him from a dentist's office ever afterwards. We should always study all the surroundings of the operation, study patient, nervous system, character of person, but many times we stop short of this. But whenever we do this it must be for the definite purpose of the case. And with modern methods of manipulation, intelligent and digital manipulation, we can accomplish ideal results or at least in a great many cases. An operation as a permanent operation is a relative term. If I see a patient eighty years of age who has filling in lateral incisor which has been there for more than sixty years, I am

willing to call that a permanent filling. A dear old mother of Israel once took my chair for a minor operation and she said: "See that filling; it was put in there more than sixty years ago." It was a splendid filling and will remain there until she dies. I wish I knew the man who performed that operation. I would travel across the continent to congratulate him. If it was possible for men sixty years ago to have done this work, it is possible for us to-day.

If I do not feel within my immost soul (and I make as many mistakes as anybody) that my fillings will last as long as I do, I should feel as if I were a failure.

In regard to the extension of contour of tooth to original form, have been pleased with what I have heard. I do not state any particular case with the idea of bringing about a certain ideal form, but always to restore to the best original form. In many cases I improve upon the form which has been given. In case which I had where lady had lost the first permanent molar on lower jaw, (and by the way, I wish the profession would rise to the necessity of saving the first permanent molar, it is the keystone of the arch). In this case the second molar tipped forward and the second bicuspid leaned backward; the distal surface of bicuspid was badly decayed. The dentist who had charge of the case would not make that filling because it was too hard. In studying case, I saw if the trouble were to be rectified it would be necessary to bridge across that space and have filling come into contact with molar. The tooth was badly broken down disto-lingually; I explained to patient it would be a long, tiresome operation. She said she was glad and willing to undergo the operation to have the tooth repaired, as it was the worst tooth in her mouth, and it was almost impossible for her to eat comfortably. Filling was made, contoured so as to extend to contact with molar and finished. The gum tissue in a short time filled up perfectly between these teeth as in any normal interproximal space.

Dr. Taft in his remarks opened up one of the most important subjects to be considered in operative dentistry, in regard to the difference in the structure in teeth. Every practicing dentist recognizes the difference between the structure of one tooth and

another; some cut easily with chisel and bur, while with others it is almost impossible to break down. Now this is not so much a difference in the structure of the teeth, so far as the constituents of the teeth are concerned, but a difference in the relation of the enamel rods one to another. If these two classes of teeth were analyzed chemically, you will find as large a percentage of lime salts in the one as in the other. This difference is simply due to the arrangement of the enamel prisms and not the chemical difference in structure. In some cases the prisms run more regularly and radiate straight out upon the dentin, one beside the other, and the cement substance which holds these prisms together is easily broken down. In other cases these prisms are wavy, irregular and held firmly together, and it would be necessary to break across a prism in order to fracture the structure. But the truth is, that teeth which are so resistant to our instruments may be just as readily attacked and broken down by the cause of caries as would be a poorly constructed tooth. point I wish to make is this, it is more a question of environments, the conditions surrounding the teeth, than tooth-structure itself, which makes the difference in susceptibility to decay. A tooth may be perfectly developed and yet be quite susceptible to caries, and again, the tooth may be friable and break down very easily, and yet the mouth may be almost free from decay. I have seen this time and again. Have had cases in same family where equal attention was paid to teeth, and they were equally developed, and yet in one case the teeth break down and decay very readily, and the other almost entirely free from caries. There are also periods in which we find decay of the teeth going on more rapidly in the same mouth. These cases are very discouraging at times, but let us go to work and fight back at the case, make temporary operations if necessary, and in nine times out of ten if the work is carried on diligently and with intelligence the cruel destroyer will be conquered and decay will cease. Dr. Taft mentioned a case where a plug of wood stopped decay of tooth. Why I have seen cases where decay was stopped without anything being placed in the cavity. I wish we could all study immunity and susceptibility. It is our greatest hope in holding back decay. I hope you will pardon me if I refer to

my book; it is something I never do, but as it was brought before I would like to request you all to read chapter on page 31 on dental caries, in which the case I am going to state was published. This was a case of a young girl whose teeth were very badly decayed, and decay was going on very rapidly and extensively. Her incisor teeth were good, but the posterior teeth were nearly all gone. Very few dentists would have had any hopes of saving them. I went to work, plastered them all up with amalgam; it was the most abominable sight possible. After struggling for some time, filling and refilling with such filling, a year finally elapsed, and she did not appear again; I thought, well, Clara has given it up. One day she came into the office smiling; she had developed into a most beautiful girl, and she said she had had no further trouble with her teeth, but she thought it best to have them examined. On examining the teeth I found they had not decayed to any greater extent, and to-day she is a young lady of about twenty-one or twenty-two years of age, and she has all of her teeth, and will have as long as I live.

One word in conclusion. When we are filling teeth we ought to be doing something more than simply standing to one side of patient and plugging that little hole with some filling material. We should study the environment of the teeth, the surrounding gums, inter-proximal space and functional activity of the teeth on that side of the mouth. Get out of the habit of simply filling these little holes and thinking that it is a minor operation.

Mr. President, I cannot close without offering a sincere word of thanks to this Society and for the kind reception given me here to-day. I have known many of the members for years. I deem it a special privilege to be here at this time. Probably I would have done better if I had been attacked a little more severely, for I bite badly. It is just such occasions as these that cause men to go on and work a little bit harder than before. There are twenty-four hours in every day, sixty minutes in every hour and sixty seconds in every minute and you can accomplish something in every second and it is just such occasions as this that makes one ambitious to accomplish something every second.

We have very fine clinics in Chicago and are always glad to welcome visitors. We have seen a number of you there, Drs. Smith, Taft, Butler, Bethel, Barber, Price, Custer, and others. I don't believe we could get along in Chicago without Dr. Custer. So it is a satisfaction to come down here into Ohio and see so many familiar faces and also so many new faces. I want to thank you again for this reception you have given me.

Motion made, seconded and carried, to extend to Dr. Johnson a vote of thanks for his paper and clinic given the Society. Dr. Smith made motion, which was carried, that the proper course be taken by executive committee to make Dr. Johnson an honorary member of the Society.

CONCEALED GOLD BRIDGE ATTACHMENTS.*

BY DR. H. M. KIRK, COLUMBUS, OHIO.

No. 1. "A METHOD OF BRIDGE ATTACHMENT DESIGNED TO TAKE THE PLACE OF THE SHELL CROWN, OPEN-FACED CROWN, OR ANY OTHER KIND OF CROWN, IN THE SIX ANTERIOR TEETH, WHEN ENTIRELY OR COMPARATIVELY FREE FROM CARIES."

This method is especially desirable in cases where all the central and lateral incisors are to be replaced, making the attachments to the cuspids, devitalize the pulp and fill canal as usual. Bevel the lingual side of the tooth to be attached, down to the incisive edge, allowing a liberal space for the thickness of the backing, in order to prevent the inferior incisors from impinging against it.

Take an impression of the prepared tooth in either plaster or moldine and pour with fusible metal. Using this as a die, swage a backing of No. 30 gauge pure gold plate (by driving the die into a soft pine block, cross section), making the backing large enough to cover the entire lingual aspect of the tooth and overlapping well the edges, particularly on the side adjoining the gum. This backing may or may not extend up underneath the

^{*}Given as a clinic before Ohio State Dental Society, December, 1900.

gum, as is deemed best by the operator. Through this backing insert a platinum, or irido-platinum wire, gauge about 15; place on the tooth and allow the post to extend well up into the canal. Fasten the post and backing together with Parr's wax, remove, invest and solder lightly together with No. 22 carat or 20 carat solder. Replace on tooth and burnish perfectly, especially around the edges, remove, invest again, and thicken with 20 carat solder. With a little finishing and re-burnishing, the attachment is ready for use. In all cases of this class of attachments, and also gold inlay fillings, the edge adaptation, and burnishing is very important, and must not be neglected, and well nigh perfect edges may be obtained in this way, with proper manipulation of the pure gold base. Finish with stone and sand paper discs and set with cement; when cement is set re-burnish all edges.

No. 2. "A concealed gold attachment for short bridge or dummy; sound teeth, living pulp, incisor."

Prepare tooth as in the preceding case, grinding and beveling to incisive edge, enough to admit of strong backing. Drill holes in lingual aspect of tooth, large enough to admit a No. 20 gauge wire freely. Two of these holes are drilled on incisive edge of tooth, near the mesial and distal corners and the other two well above these, and all four as nearly parallel as possible. lower pair of holes may be from one-eighth to three-sixteenths of an inch in length, the upper part considerably shorter. There will be little danger, if any, of coming into contact with the pulp if the drilling is close to the corners of the tooth; for it is well known that caries may be quite extensive on either the mesial or distal side of the tooth without involving the pulp. An impression of the lingual aspect of the tooth is then secured as before and poured up with fusible metal. Swage a backing of pure gold plate, 30 gauge, lapping well over the sides and incisive edge, and especially on the side next to the dummy space. Punch holes in the backing for the lower pair of holes, and insert short pins to the full length of the holes drilled in the tooth. This wire, as stated before, is irido-platinum, 20 gauge, with screw thread. Fit well and burnish and fasten backing and pins together with Parr's wax, invest and tack together with 20 carat solder. Replace the backing with the two pins in the tooth, punch the upper pair of holes, insert and tack the upper pair of pins as before. Fit again to the tooth and burnish perfectly, remove carefully invest again and stiffen and thicken with 20 carat solder, when the backing will be ready to use as an attachment for a dummy or short bridge.

No. 3. "Concealed attachment for biscuspids for bridge or dummy, instead of shell or open-face gold crown."

Devitalize the biscuspid, and prepare canal as usual, through an opening drilled in the center of the sulcus of the tooth. Enlarge for the accommodation of 20 gauge wire (irido-platinum) and of good length. With small carborundum stone increase the depth and breadth of the sulcus, until it becomes a wide, deep grove, particularly so on the side adjoining the space for the dummy. If the dummies are to be inserted on the mesial side of the tooth, then this aspect of the tooth must be ground flat and perpendicular, straight up and down, from the occlusal edge of the tooth to a point slightly under the cervical margin. Take impression of tooth in plaster, make a fusible metal die, filling up the impressions of the adjoining teeth with moldine, before pouring the metal. Swage 30 gauge pure gold over the mesial and occlusal aspects by driving the metal tooth into a transverse section into a block of soft pine wood. Punch hole for the fifteen gauge irido-platinum post, place in position on the tooth with the post in the root canal, fasten with Parr's wax, remove, invest and tack post with 20 carat solder. Replace on the tooth and burnish and trim perfectly, allowing the plate to lap well over the edge. As in the preceding cases, a good fit and the subsequent durability of the bridge depend upon close adaptation of the pure gold, which can alone be secured by burnishing (thicken with 20 carat solder as before). Contour and finish properly and a strong artistic bridge pier is the result. Finish on the tooth with carborundum stone and sand paper discs.

MISTAKEN DIAGNOSIS AND THE MISTAKES WE MAKE.*

BY H. H. HARRISON, D. D. S., WHEELING, W. VA.

There is no doubt of the fact that as the world grows older the human race grows wiser. And yet with all that has developed in science, and the wonderful progress made, we find blunders, errors and mistakes on every hand, proving that many of the same conditions still exist that were present, no doubt, even in pre-historic times. These conditions obtain in all classes and among all peoples, with the illiterate barbarian in his far-off home in the islands of the sea, with the best civilized people in the largest cities of the world, among the rich and among the poor, among professional men, business men and laborers. Mistakes are the birthright of man. Our profession comes in for its share, but it is our duty to modify its frequency as much as possible by continuity of thought and precise action. We should see that the lamp is kept burning in the lighthouse, and warn our friends by danger signals when the shoals are near-by.

We cannot expect to sail through our professional lives without coming into stormy seas, but we must be upon the lookout with steady nerve and concentrated mind ready for any emergency. We must expect to meet obstacles that require anxious thought and great labor. This strengthens us and makes us better men.

I am not presenting these thoughts in a critical mood, but only and alone for the purpose of opening up the way by which we all may see more clearly the light that may lead us away from the mistakes that have been made.

He is a wise mariner who steers clear of the breakers where others have been wrecked.

The subject of physical diagnosis is one of the most important for the general medical practitioner, for without knowledge of the true pathological condition, the administration of therapeutical remedies is only guesswork; so too with the specialist; he must know the character of the disease before he can intelligently treat it.

^{*}Read before the Ohio State Dental Society, December, 1900.

Symptoms are sometimes very deceptive and the most astute diagnostician is liable to mistakes, but these errors may be reduced to pardonable frequency by close individual attention, persistent examinations and concentrated thought.

Let me speak of a very few cases which came under my observation the better to illustrate my ideas:

The first was a case of fungus hematodes (bleeding cancer), which was treated for three months as ulceration of the mucus membrane of the antrum. As a dentist, I was called to treat the case, but being young in the profession at that time, I called a physician as counsel. We agreed upon the diagnosis, but after the above time in treatment with the most approved remedies with no improvement, I began to suspicion malignancy and mentioned my suspicions to Dr. Blank, who did not share my belief. We called in a noted specialist, who fully agreed with me and accepted our treatment as the best that could be made. The case terminated fatally, of course, and could not have been saved, even if the proper diagnosis had been made at first; but it humiliated me, for in looking over it now the case was plain enough that I should have avoided that mistake.

This emphasizes the importance of scrutinizing every symptom presented. We must not take things for granted, but be able to give a reason for our faith and action. In all cases of obscurity let every symptom and evidence be thoroughly weighed.

The next was a case of sympathetic neuralgia, diagnosed meningial irritation by a prominent and celebrated physician. The patient was a man thirty-five years old, and when I saw him, was emaciated and anemic after three months' treatment for disease of the brain. He had been suffering with paroxysms of pain at the base of the brain all this time, until appetite had departed, sleep was a myth, and he was a perfect wreck of his former self. I was called to examine an aching wisdom tooth and upon percussion it produced this pain in the head. I repeated it several times, which satisfied me as to the cause of his brain trouble. The attending physician would not agree with me, but the tooth was removed, the pain ceased, the appetite and sleep returned and he was again a well man. This was

a typical case of reflex nervous irritation, wherein the extremity of the nerve was diseased and the pain was felt at the origin of the nerve at the floor of the fourth ventricle of the brain.

This case shows the importance of physicians and dentists counseling with each other in such diseased conditions. I was fortunate to find the key to this trouble and the physician had not considered dental influence in making up his diagnosis.

My next was a case with a bifurcated diagnosis; one physician made it a case of necroses of the superior maxillary bone, another pronounced it cancer.

The patient, a man forty-two years old, was wearing an upper set of teeth twelve years old. Upon the alveolar border, near the location of the cuspid tooth, were two openings in the soft tissues from which pus was escaping almost constantly, while just below the infraorbital foramen there was a considerable enlargement, very hard and tender. I delayed my diagnosis for a few days and injected diluted tincture iodine into the openings, which soon stopped the formation of pus.

I then made a critical examination with an instrument, and obtained the desired information by the explorer coming in contact with enamel structure. Extracted a supernumerary cuspid in form of a quarter moon.

I could mention many more cases, but want to say something about other mistakes we make that are threatening the dignity of our profession even more than the above.

There has become such a craze for gold crown work that it is becoming alarming, and a check must be made soon or coming history will have great room to make a caustic criticism upon the operations made in the present era. I do not mean to say that gold crowns should not be used as a means of saving teeth, but the operator should not be so indiscriminate as to when and where he places them. We all know that the highest aim in art is to approach the natural, and a gold crown placed upon a front tooth is anything but natural—it is abominable. To mar the beauty of the human face, and place the D. D. S. upon it is a stroke at the vitals of aesthetic dentistry. If they should ever be used for front teeth at all it should be under the most peculiar circumstances. I can conceive of circumstances where it would

be proper, but they are very rare indeed. We all make enough mistakes that are excusable, but this is not. It is a burning shame that dentists have permitted this error to become so general without sounding a public alarm.

While we are regretting the mistakes we have made, we must take some credit for the persistent efforts that are being put forth in saving teeth and roots from the cruel forcep. It shows signs of the opening bud that has been too sluggish in its development. It will be a great thing when we can get along without extracting any tooth or root. However this condition of things is much to be desired it is not with us yet, and we must make the best of it.

There are thousands of teeth sacrificed yet that could be saved. If we could all reach the point of seeing the great injury inflicted by even the loss of one tooth, at times, it would have a restraining influence for great good. When we consider that mastication is the first step in the digestive process, and that imperfect digestion is at the bottom of most of the ills of life, we can get a more perfect conception of what the loss of the natural teeth means.

We make another mistake in permitting the indiscriminate use of tooth-powders, pastes or mouth-washes that are on sale for the public. There is just as much reason in a physician prescribing sub nitrate of bismuth for all characters of stomach trouble, as there is in using a general dentifrice. There are none made from the same formula that are universally applicable, as what suits the young may not suit the middle-aged, and does not suit the old. The changing conditions that may occur at any time in life may necessitate a change in treatment. These shotgut prescriptions are not up to the present age.

The saponaceous preparations are only appropriate where there is a strong acid reaction in the fluids of the mouth and are very inimical when patients have a gouty diathesis or when pyorrhea is present or indicated.

Whether by accident, mistake or natural cause, your patient has lost his or her natural teeth, that person should enlist your sympathy, your special interest, and you should make the strongest effort to compensate your patient for this loss. Unfortunately

this is not universally the case, as is shown by the hideous monstrosities that are walking monuments in many of our streets to-day to the discredit of some dentist who has made a mistake.

I am happy to sav that we have many operators who will not allow such conditions to escape from their hands, but some do, and these are the cases we should reach. This condition of things is partly due to the fact that many operators do not direct or superintend the making of the dentures that they place in the mouth, and it is only accident if such cases fill the requirements of the patient. The prosthetic dentist cannot be responsible for failure in a case that he has not seen, but the dentist who takes the impression should be, and cannot afford to see his patient's face and countenance changed almost beyond recognition. Sometimes you find just such cases even from the hands of the very best operators. This is a mistake and should not occur, for it is not excusable in a man who knows the right. Many of these hideous structures come from the advertising shops where nothing but money enters into the case, and the more the case is slighted the quicker the return and the more of it for the cost.

We want more honorable, honest, conscientious men in our profession and fewer drones.

I am glad to say, in conclusion, that Ohio has as many good men as dentists and as few poor ones as any state in the Union; am glad I am a native born Buckeye and that I have the companionship and the good will of such noble men as I see around me.

THE DENTAL ASPECT OF EPILEPSY.*

BY H. C. BROWN, D. D. S., GALLIPOLIS, OHIO.

In regard to the dental aspect of epilepsy I will say that perhaps I have been situated a little differently from any other dentist present, for I have been practicing in Gallipolis, where the state hospital for epileptics is located. I might state incidentally that this was the first public institution that was founded in America for the treatment of epileptics, and that they now have something like one thousand patients under treatment. Epilepsy is a

^{*}A talk before Ohio State Dental Society, December, 1900.

disease of which few people are acquainted and no one realizes how extensive it is. The superintendent, Dr. H. C. Rutter, estimates that there are more than four thousand in this state. We that come into contact with these people realize the great need of a dentist's attention, but they have no dentist, however. The patients pay very little attention to their teeth. If anything is done it is usually an extraction; they send the patients first to the druggist, and when he fails, we get them. There are a few patients, of families which are well to do, which are sent to the different dentists of the city.

Although, as I said, they are a class of patients whose teeth demand a great deal of attention, yet they get very little. The principal treatment in the hospital are the bromides, and they are given in very large doses. The patients have fetid breath, highly inflamed gums, the mucous membrane is not very sensitive, however; if it were they would suffer a great deal more from pain than they do.

It seems that dental irritation plays an important part in causing the epileptic attacks. I have operated upon patients and kept informed of them afterwards, where I know that the removal of some badly decayed or ulcerated teeth had caused an improvement in the patient and the attacks would be less severe and not so frequent as before.

Another point, the patients require a great deal of attention. The last thing they do before passing into one of their attacks is to give a sudden inward gasp of breath and it has happened that things which were present in their mouths were drawn down into the larynx. When this happens they usually die from suffocation before the trouble is discovered. Therefore too much care in operating cannot be practiced. This will also prove the necessity of their retaining their natural teeth, if possible. Partial plates and bridges which are likely to work loose, etc., are dangerous. If a patient wears a plate the first thing the attendant does at the beginning of an attack is to try and remove it.

There is no doubt they do suffer with odontologia to a certain degree, but not so much as other people would, as their sensibility is seemingly reduced to a low point.

One peculiarity of these people, when one goes for attention

to a dentist all who are acquainted with and see the patient become immediately affected in the same manner, and if anything of this kind happens they are usually sent to the druggist, who extracts the teeth. This is the druggist connected with the hospital, understand. I do not know what effect the bromides have on the osseous system, but I know they do reduce the vitality of the patient and the teeth seem to be much softer than those not taking treatment for epilepsy. This is all I have to say.

A CASE.*

BY J. TAFT, M. D., D. D. S., CINCINNATI, OHIO.

Mrs. N., of comparatively good constitution and good health, whose teeth have been in the care of the writer for fifteen years or more, reports an affection which she has had during the last two weeks.

A whitlow or felon was formed on the index finger of the left hand, which, as such things usually do, gave very great pain. At the onset of this affection the teeth in both jaws became exceedingly sensitive, so that it gave pain to bring the teeth in contact. Pain was experienced even by pressure of the tongue upon the teeth. The gums about all the teeth became exceedingly sensitive and swollen. The patient could scarcely distinguish from which she suffered most—the whitlow or the diseased gums and sensitive teeth.

A strange feature about it was that there was a correspondence in the severity of pain between the two affections. When the pain was most intense in the finger the greatest pain was experienced in the gums. After the felon had formed as she supposed, the finger was cut open and very soon thereafter the pain ceased, so did the pain in the teeth and gums.

As the finger returned to a healthy condition, the gums did the same. The teeth were examined and not one was found to be in a condition that could in the slightest degree account for this affection of teeth and gums.

The teeth and gums altogether became affected in irritability,

^{*}Presented at Ohio State Dental Society, December, 1900.

sensitiveness and swelling. These conditions subsided with the recovery of the felon. No treatment was given to the gums and teeth and they are now in the usual good condition, perfectly natural in appearance; the teeth entirely free from any apparent abnormality.

Eight or ten of the teeth had at various times been filled with gold, but none within the last year and a half.

This is a brief outline made of the case as it presented itself and it was an important and very strange one, that there should be that correspondence between affection of finger and tooth. You have all probably either heard of similar cases or at least read of such. Although these are two distinct parts of the human body, yet the tissues affected are somewhat analogous, it was the periosteum of finger and also of tooth which was affected. The periosteum about the root of tooth is somewhat different than that of other bones; it is inclosed on both sides by bony structure and it is also subjected to much greater impulses as in mastication, as pressure is made upon teeth this bears down on periosteum lining the sockets. The periosteum lining bone of fingers is also subjected to impulses, as there is pressure made in the seizing of objects and use of the fingers, but not so pronounced, however, as in the tooth. Whether this has anything to do with this correspondence in these conditions I cannot say positively, but there is this analogy between them. It is a well understood fact that structures similar in character are likely to be affected wherever they exist in the body. If they are similar in their characteristics they will suffer under any general influence operating in the body. Another singular fact is that the whitlow is a local affection, but is not wholly independent of constitutional conditions which may exist. A condition must be favorable for it. Therefore where there is a similarity of structure and predisposition to affection, these like structures or tissues would be likely to suffer alike.

DISCUSSION.

Dr. C. R. Butler refers to accident to middle finger and bruise of periosteum, which happened about five years ago, which still gives trouble occasionally while operating. On wishing to

exert pressure on instrument he finds himself clinching his teeth in order to work with greater precision and more force. These influences are very peculiar and we all know how one part of a similar structure may be reflexly forced to work in accord with another, so why will not one portion take up the trouble of another in sympathy.

Dr. H. H. HARRISON: Several years ago I read an article from a very distinguished and eminent gentleman, who referred to the anatomy of the brain with respect to the nervous system, who made the statement that for every portion of the human body there was a certain portion of the brain that corresponded with a nervous center. If that be the case it is not difficult for us or anybody to realize how intimately the nerves may be connected with the whole human frame, and such a case as this would not be difficult to explain. It seems to me this was rather a coincidence than anything else. By the condition of felon on the finger the blood being forced to that part at the same time it would be forced to the other part in a somewhat abnormal state, the effect would be the same, increased and diminished pain in each part, from natural force of effect of blood. This matter of the effect of nervous transmission from the brain to the extremities is something I think of which we have not reached the bottom by any means; the time is coming, however, when we will all know very much more about the nervous system than we do to-day and will explain many things of which we are ignorant.

DESCRIPTIONS OF CLINICS GIVEN AT OHIO STATE DENTAL SOCIETY.

GOLD FILLING WITH SMOOTH PLUGGERS. BY DR. J. B. BEAUMAN, COLUMBUS, OHIO.

This clinic consisted in the filling of a tooth with smooth filling instruments. The gold used was No. 6 foil, the leaves taken from the book and carefully laid on top of each other and pressed together by placing the empty book on top and rubbing the hand

over the book, the sheets thus placed forming a No. 60 foil. This was then cut once through the middle and then strips were cut crosswise as desired. This was then annealed and malleted into cavity with hand mallet and use of burnished pluggers consisting mostly of small points. The cavity presented was a large-distal cavity in a superior left incisor.

The doctor also filled a tooth that was imbedded in plaster, using the same materials and instruments. He would file and scrape the surface of the filling, then re-mallet and burnish again. He finally knocked the filling out, hit it a tap with a hammer on an anvil, then rolled out to about a No. 60 foil and refilled another cavity with the gold thus obtained. This gold presented much the same appearance as it would on being melted and rolled out. It was an exceedingly interesting clinic.

FILLING BROKEN-DOWN TEETH WITH THE AID OF A MATRIX

BY DR. H. M. SEMANS, COLUMBUS, OHIO.

Clinic consisted in the use of a simple matrix about a badly decayed first inferior molar whose lingual wall was broken entirely away. Pulp dead and removed. The matrix of desirable thinness is cut and bent to fit the tooth. The ends passing a short distance beyond the remaining mesial and distal walls. A hole is punched at each lower end of matrix, one end of a thread is passed through both holes, the matrix then placed in position, the thread being slipped over the buccal wall and forced well down on mesial and distal sides, after which it is tied with a surgeon's knot, the ends of the thread may be passed about the matrix and tooth as much as desired, adding rigidity. Rubberdam, cotton or napkins may then be used to suit the case or desire of operator. A matrix put on in this way may be retained in the mouth a number of days with no discomfort to patient. Clamps can be used very readily against such a matrix.

The materials used for matrices are platinoid, German silver, flexible steel and sheet copper, tinned.

THE USE OF GOLD AND TIN AS A FILLING MATERIAL.

BY DR. J. R. CALLAHAN, CINCINNATI, OHIO.

Gold and tin in definite proportions for filling. The combinations consist of (1) gold two parts, tin one; (2) gold ten parts, tin one; (3) gold and tin equal parts. Uses Abbey's non-cohesive gold No. 10 also uses tin foil No. 10. Doctor claims the use of these combinations is only good in four wall cavities. Uses combination of the number three for submarine work and also where there is no great strain. Combinations (1) and (3) turn dark

We want more honorable, honest, conscientious men in our while combination (2) holds natural color. A sheet of gold and a sheet of tin is laid together, cut into strips and then inserted into cavity and forced into place by the use of the old-fashioned burnished hand pluggers, soft gold or tape pluggers, like Dr. B. J. Bing's. After cavity is filled protruding over border of cavity an engine burnisher slightly larger than the cavity is used to condense down the surface, running the engine very rapidly, after which filling is ground and polished to its proper finish.

PORCELAIN INLAY—DR. JENKIN'S AND DR. HEAD'S METHODS.

BY DR. D. W. CLANCEY, CINCINNATI, OHIO.

The doctor removed two good gold fillings on the labial surface of superior central incisors. Prepared cavity in the usual way for reception of inlays, that is cup-shaped, then proceeded to the building up of inlays not using Dr. Jenkin's method, however, entirely as Custer furnace was used to bake inlays. Used the gold foil for one inlay, the platinum foil for the other. After being baked they were disked to the proper shape and inserted in cavities.

CONTOUR FILLINGS WITH SOFT FOIL. BY DR. G. S. JUNKERMAN, CINCINNATI, OHIO.

Cavity presented was a large mesio-occlusal cavity in superior left bicuspid. After preparing cavity in the usual manner, it was filled something after the following method. No. 4 foil was cut in half sheets and rolled lengthwise into a long roll. These were taken in foil carriers, grasping roll of gold by the middle, and rolled upon itself over the end of foil, carrier then inserted into the cavity and forced into place by hand pressure, after which it was condensed by the use of the mallet. The doctor worked quite rapidly and filling, when completed, appeared to be first class.

A BANDED LOGAN CROWN.

BY DR. W. H. GENSLEY, CINCINNATI, OHIO.

In this operation the root is prepared in the usual manner and the band made same as for Richmond Crown, except that no post is soldered to band. Instead, an elliptical hole large enough to admit Logan crown post, is punched. Place band on root, and if considered necessary take wax bite; next insert an orange wood peg into the canal (not too tightly) and take impression in plaster. Upon removal, band and peg will come with it. I'our and separate model as usual, then withdraw peg from model, which will leave an opening giving the direction of canal. Place the waxed impression on model and run bite. Now select Logan crown suitable for the case, joint and articulate properly with carborundum wheels. Next fill concavity in crown with thinly mixed cement and place back on model, this cements crown to band. After cement is set, with sharp knife trim plaster from around band, remove from model, and invest (crown down) in equal parts plaster and white sand. Pack gold foil around pin, lay on one or two small pieces of 18 or 20 carat solder, heat case and solder. This results in a crown possessing all the naturalness and strength of the Logan, with the additional advantage of having the root protected.

SETTING OF A LOGAN CROWN BY USE OF A RUBBER DAM. BY DR. JAMES E. BOYD, CINCINNATI, OHIO.

In this operation Ivory's Clamp No. 6 is used, forced well down on root; the doctor claims that root can be ground further

underneath gum margin than without rubber dam. After applying dam by use of this clamp, root is ground in the ordinary manner and crown ground to place. The great advantage of this modus operandi consists in a dry and clean operation. This clinic was greatly criticised, the majority believing the old-fashioned way the better.

A PRACTICAL METHOD OF CROWNING A BADLY DECAYED BICUSPID ROOT.

BY DR. A. F. MILLER, SANDUSKY, OHIO.

In this operation the root is prepared in the usual manner, a piece of irido-platinum wire, No. 13 gauge (Brown and Sharp) is taken and one end flattened to about No. 19 gauge. It is better to roll the wire, as hammering has a tendency to split it at the end. Make a chisel out of an old excavator handle, split the flattened end of wire on an anvil, then flow a small piece of 20 carat gold solder at the bifurcation to prevent the post from splitting when forming it to fit the root. Fasten the post in the crown (I use a Davis crown) with cement. Moisten the canals with oil Cajeput and pack guttapercha lightly into the canals with warm instruments. Moisten guttapercha on outer surface with the oil, warm the post and press the crown home and then burnish the guttapercha with a warm, flat burnisher. perca is insoluble in the fluids of the mouth and non-irritating to the soft tissue and retains the post as firmly as cement. The doctor prefers irido-platinum for the post on account of its rigid quality.

CAST ALUMINUM PLATES.

BY DR. W. O. HULICK, CINCINNATI, OHIO.

The doctor presented a casting flask which had a detachable pouring top. His method of procedure was as follows: Impression of mouth is taken, model made and wax built up on model as for ordinary cast lower or upper plate, only it is made much thicker. It is then set up in casting flask, second half poured up, separated. Now instead of cutting gates at each

heel, gate is cut extending along entire posterior portion of plate for uppers, making it very thick. The cast is then set aside and dried and allowed to cool. The second portion of flask, through which metal is poured, is then set down on top of flask, this portion being heated and metal poured while it is quite hot, while the mold proper is cooled before pouring. He claims by this method the plate is chilled suddenly and the large bulk of metal in the pouring gate, being kept warm, cools slowly and shrinkage takes place in this portion. Plate is then taken from flask and this large, thick gate is cut off by means of saw and coarse files. Plate proper is then smoothed and finished up and, where rubber attachment is to be made, it is burred out by the use of vulcanite burs keeping a good, definite border around lingual portion. The aluminum used is that made by the Pittsburg Reduction Co., which is very nearly pure.

A NEW METHOD OF MAKING DUMMIES. BY DR. J. K. SMITH, ZANESVILLE, OHIO.

After a pivot or abutment to which the dummies of a bridge are to be attached is made porcelain artificial teeth are ground into place to articulate with the opposing teeth. After this is satisfactorily done the porcelain teeth thus articulated are taken from the case, backed up, of course, with some sort of sticky wax, an impression of these is taken in moldine clay, a die poured up and the teeth thus swaged up by the use of No. 28 gold plate, swaging directly into lead, using no counter die. This mold in gold thus formed is either flowed solidly full with solder or backed up with gold and soldered. This is then filed to fit between two crowns already formed for bridge and the whole soldered together and thus solid gold bridge is obtained.

(a) MODIFICATIONS OF THE SIMPLE MATRIX. (b) METHOD OF ATTACHING BRIDGE WORK.

BY DR. C. T. WHINERY, TOLEDO, OHIO.

(a) This simply showed the arrangement of small lugs at the bottom of an ordinary matrix to prevent the separator from

slipping away from the gum tissue or the matrix from jumping out of the space. This, of course, is only practical where separator is used, but was a very simple and ingenious device.

(b) This method shown is indicated especially where one, two or three lower incisors are lost through pyrrhoea alveolaris or other agencies. Where firstly the remaining teeth on either side cannot be ground sufficiently for bands without destroying their contour and secondly where these remaining teeth have receding gums and there is a tendency for them to be loose, and it is desired to keep any irritation from the gums such as bands would make. His method consisted in gold caps over the cutting edges to be used instead of gold bands or crowns for supporting the bridge.

A NEW METHOD OF SWAGING METAL PLATES BY DR. E. L. PATCHIN, CLEVELAND, OHIO.

This consisted of using a piece of car spring rubber as a counter die. It was given the general shape of a counter die except that it overlapped about one-half an inch all around. The metal is placed upon the die and the rubber counter die No. I was put upon it and it was put into a flask press and carried hard down upon the die. The plate should strike the die in the center of the palatal surface and spread from the center outward. Then take a machinist's hammer and pound down the rubber upon the die carrying the plate down over the process. It is then taken from the flask and by means of the crown shears trimmed for the rim. It is then placed upon a swage block and struck by the round end of the machinist's hammer, over which is placed a rubber crutch tip, which has in it a piece of heavy rubber. By this means the plate is forced into absolute contact with the die. The plate should be steadied with the fingers while driving it home in order to keep it from jumping from place. It is then placed in the holder again with the counter die (rubber) the same as No. 1 with the exception that it covers over the palatal surface. It is forced down tightly in press and thus held in place while the rim is pounded down with a horn mallet.. Now release rubber holder and put on No. 1 again; then put on a

piece of packing rubber about a half inch wide, about fourteen inches long and one-third of an inch thick. This passes around the rim of plate close up to No. I projection, as it projects at the heel of the plate gather the ends into the left hand and tip the rubber covered die back upon the heel of die and pound down rim.

This is particularly desirable for aluminum plates, as the surface is to be kept free from scratches and blemishes as far as possible. Mention was made of substituting finely cut up rubber cark in the Parker Swage Apparatus. This not being necessary it was not dwelt upon.

NEW APPLIANCES.

BY DR. W. A. PRICE, CLEVELAND, OHIO.

Dr. Price presented two very ingenious appliances; the first consisted of an instrument designed for putting in guttapercha fillings made after the principle of an electric cautery. It was suggested to the doctor that the same principle could be utilized in the making of wax spatula. The second consisted of an appliance to the hand-piece of a dental engine for the purpose of blowing a constant stream of warm air into the cavity while excavating. A stream of air is forced over a small incandescent lamp in this way heated at the same time light is thrown into the cavity.

GOLD AND FELT FOIL FILLING.

BY DR. L. T. CANFIELD, TOLEDO, OHIO.

The cavity was a right first superior molar anterior proximal. Lingual and buccal walls were badly broken down, cervical border decayed to considerable depth below the gum line. A very narrow matrix was used about an eighth of an inch wide at the cervical border. No separator was used, as there was some separation. The cavity was prepared in the usual way, the buccal and lingual walls were cut away quite extensively owing to their being quite frail. The bottom of the cavity was filled with Robinson's felt foil (tin) by the use of hand pressure, being

careful to cover all cervical margins. The filling was finished with Morgan & Hasting's cohesive gold condensing with pneumatic mallet. This latter being one of Dr. Canfield's own design and the use of which he demonstrated. The filling was contoured well over the buccal and lingual borders, buckling tightly against the prominent tooth. It was then separated a trifle with the separator to allow of proper finishing. After the filling was finished and separator removed, the filling buckled tightly against the bicuspid at its proximate occlusal surface.

REPORT OF COMMITTEE ON DENTAL WORK IN THE PUBLIC SCHOOLS IN OHIO.*

Dr. Price was called upon for report of Committee on Dental Work among Schools. Dr. Price stated that the method of procedure of the committee had been to present plans to superintendents of the different schools of the cities and towns of the State to lav out some more definite plan. The committee thought good, systematic work could be accomplished by having a salaried man give public lectures with stereopticon views, this to be co-operated with in every place by the public schools and all educational circles. This work is for the future and they hope for success. The past work has merely consisted in placing in the hands of the committee men in each of the important cities and towns, their plans, etc. Would develop each town and township in the State in this manner. The committee asked that the president of the Society be granted the privilege of appointing from time to time the necessary aid to keep up this work.

^{*}Presented at Ohio State Dental Society, December, 1900.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

A Word About Neuralgia.—The surest way to cure neuralgia, if of long standing, is to extract the bad teeth or stumps, but in cases of short duration the nerve should be treated and the tooth saved in the usual manner.—Dr. Hayman.

Pericementitis.—When you have a pericementitis tie a strong cord or ligature around the root, producing traction, and then paint the gingival margin of the gum with two or three heavy coats of compound tincture of iodine. Then give the tooth a rest.—Review.

Shellac Regulating Bands.—Not every one knows that to paint shellac over a tooth on which you are to place a band, as in regulating cases, helps to hold the cement. Paint on varnish, wait till it dries, and then cement the band. It sticks like glue.—J. B. Hodgkin.

Leave Root Canals of Temporary Teeth Unfilled.—Thought and study of results and causes have taught me that it is not only safe to leave the roots of the temporary teeth open, but that it is the wisest and safest practice, and carrying out the principles involved to their logical conclusion.—G. S. Allen, International.

To Remove Stain From Dark Joints.—You have mended a case and are annoyed that the joints look dark and ugly. It is a stain that wears out after a while, but it disfigures the plate. Touch the dark places with a very little nitric acid. It dissolves off the stain. Wash off the acid, and you will be pleased with the result.—J. B. Hodgkin, Dental Hints.

PULPS DIE UNDER CROWNS.—We have recently removed four molar shell crowns from the mouth of one person and three of

the pulps were dead. All of these teeth had living pulps in them about three years ago, and nothing but the enamel had been removed prior to filling the shells. It seems that pulps will die under crowns even when coated with oxyphosphate zinc.—Dental Review.

TREATMENT OF CARIES OF THE TEETH.—In my own practice I have relied chiefly upon a strong solution of hydronapthol in oil of cassia. * * * This I use freely in all cavities, and then before filling I use a varnish of Canada balsam in chloroform in which there is ten per cent. hydronapthol. My patients use a dentifrice in which hydronapthol and oil of cassia are the principal germicides. Decay in many instances has been almost entirely arrested.—I. Leon Williams.

Preventive Medication.—It is my custom to prescribe hydrogen dioxide and milk of magnesia whenever I see any tendency to pyrrhœa or cervical decay. I believe that a three per cent. solution of hydrogen dioxide (aqueous), used daily, to be the best and safest preparation that a patient can use for all infectious conditions of the mouth. It is a good antiseptic and free from unpleasant taste. As an antacid I prefer the milk of magnesia. This should be freely used just before retiring, especially around the necks of the teeth.—E. H. Raymond, International.

Shaping the Model for a Crown.—In shaping the model for a crown, I find it a decided advantage to form on the lingual and buccal or labial side a slight bulge, corresponding to the enamel projection seen on deciduous teeth. So formed, the crown slips over the root easily, and makes a closer fit. I have thought, also, that the gum, favored by the slight protection this gives, covers the edge better, and is less liable to recede. When the crown is to be inlayed, or porcelain-faced, this projection is of artistic advantage by throwing the gold collar in the shade, making it far less conspicuous.—N. H. Keyser, in Dental Brief.

EUCALYPTO-PERCHA.—I wish to call attention to the remark that gutta-percha thoroughly dissolved in chloroform (chloropercha) and placed in a root-canal in time occupies less space than it did at first, which phenomenon we know to be due to shrinkage.

I would like to say that gutta-percha dissolved in eucalyptus oil (eucalypto-percha) does not contract but remains the same, the eucalyptus oil even penetrating into the dentinal tubuli. I have found that to be the best material, and have used it for a long time (seven years or so).—Dr. Leroy, International.

Sensitive Dentine.—By adding just sufficient carbolic crystals to cocaine hydrochlorate, and rubbing together with a spatula till the cocaine is dissolved, a thick syrup is obtained, which is escharotic, antiseptic, obtundent. With this we often obtain most gratifying results in the treatment of sensitive dentine in cavities of decay. It should be used with the rubber-dam, dryness to the verge of desiccation secured, applied warm, and treated in situ with the hot air syringe, as hot as can be borne, and again dried before excavating. If one application fails, two most invariably will be effective.—C. B. Rohland.

Scientific Root Filling.—Iodoform in ether, a varnish of rosin in chloroform, and gutta-percha points, seems to me to represent the most scientific root filling. By this method, having the cavity rendered antiseptic by hot air, hot points, etc., the iodoform in ether is introduced, and the porous tooth-substance must absorb some of the iodoform. This is sealed in by the rosin varnish. The apical foramen is closed by the gutta-percha points with iodoform ahead of them, and the points solidly fill the canal. The cavity in the tooth is then closed with a suitable filling and the three sources of infection are taken care of.—Dr. Onderdonk, International.

CEMENTING CROWNS.—Of the many oxyphosphate cements in the market, I prefer Weston's for inlay work, on account of its slow setting and its marked adhesiveness. The package containing four colors permits of shading to correspond with any shade of tooth or enamel. This cement is also lighter in color than most colored cements; in any cases this is a decided advantage. When the inlay is backed with a light-colored cement it seems to give it a more natural appearance. The inlay will hold firmer if the under side is slightly roughened by grinding, or, what is preferable, protect the face with yellow wax and apply for a few

moments hydrofluoric acid to the back to remove the glaze.—N. H. Keyser, Dental Brief.

Kowarsko's Paste.—The paste which Kowarsko presented to the members of the International Dental Congress at Paris, composed of acetone and celluloid, may have a wide range of usefulness. I have used it on the sensitive neck of a tooth to cover it for a few weeks. If the tooth is dried with alcohol the liquid can be smeared over the neck of the tooth or the crown, and it will dry in about fifteen minutes. It sticks to a tooth very f. mly. I am using the paste composed as follows:

Acetone																		
Celluloid	,						 			0		a	0		0	0	gr.	155.

This makes a stiff paste; it must be well mixed. I am using it to hold loose teeth together. It will harden sufficiently in about one hour and a half. You better get some and try it.—Review.

A Word About Gutta-Percha Points.—I believe them to be the best root-filling if the canal is absolutely dry; if it is not dry, I think they are the worst thing that can be used. I dry the root by means of chloroform or ether, with iodoform in solution, then the hot point and hot air. I introduce a gutta-percha point a little smaller than the canal, the point being moistened with chloroform and having a bit of iodoform on the end; this is carried to the extreme end of the canal; again use the hot air and soften the gutta-percha to a creamy consistency, and with pressure force into place, and I believe that canal will be closed as well as can be done by hand of man. Supposing that a portion has passed the end of the root up into the jaw, I know of no material that would be retained as well.—T. W. Onderdonk, International.

Suggestions on Use of the Hypodermic Syringe.—Drop a small piece of absorbent cotton into the fluid to be drawn into the syringe. Press the syringe against the cotton and the syringe will be filled with a filtered solution; no specks to stop the syringe, and less risk of after irritation at the point of puncture. Hold the syringe so that the beveled surface of the needle's point shall be firmly pressed against the skin. If the syringe is held at a right

angle, the least puncture of the mere point of the needle will permit the fluid to pass under the scarf skin on a firm pressure of the piston. A white spot marks the success of the dose. We have thus caused the least pain. If slowly and carefully done no pain is felt. The tissues are wounded the least and absorption is hastened. Always hold the syringe so that the needle points outward, and on having introduced a mere drop wait a few seconds for a sedative effect on the tissues, then slowly push the piston home.

If the needle becomes stopped, introduce the wire at the point of the needle, as the plug can be forced more easily in the direction from which it came.

If the needle be stopped by a vegetable substance, hold the needle in the flame of the gas or the lamp and the plug will burn out.—Dental Office and Laboratory.

Relief Spaces Compared with Vacuum Chambers.—In vulcanite work I always relieve the pressure over the hard portion of the vault. First, No. 60 tin foil; second, Speyer's surface cohesive forms (made of No. 120 tin); third, rolled tin from 15-1000 to 30-1000 of an inch thick. In metal work I generally use the invisible form of air chamber, so-called. The principal object is to relieve the pressure upon the hard portions, and not use these as a fulcrum over which the denture will rock.

There are advantages but far greater disadvantages in the deep air chambers. There is no question, I think, in the minds of dentists about the air chamber being an aid at first. The contention is in regard to the result after the plate has been worn a few months. I make the following suggestions:

First. The mucous membrane does not attach itself as firmly to a polished surface as to a rough one. Hence the crudely made and unfinished palatine surface may be retained much firmer than the work of a skilful and finished workman.

Second. That a deep air chamber is of permanent retaining value, because of the roughened surface produced. Also the cupshaped depressions of Speyer's surface cohesion forms will be a better retainer than the plain No. 60 tin foil.

Third. We are under professional obligation to our patients,

to secure the health of their mouths rather than the utmost retentive force upon the artificial denture.—G. H. Wilson, in Items.

THE ANCHORING OF INLAYS .- I have a word to say in reference to the matter of anchoring inlays. If an impression is to be taken the cavity must be so shaped that it will draw—that is, made without undercuts. After the inlay is made and fitted accurately, if we will make a little groove on opposite sides of the cavity and then in the inlay make corresponding grooves that will come opposite these, when it is cut it will be anchored with the cement in such a manner that it will be pretty sure to stay. Of course, with a very thin inlay, there is difficulty in making such a groove without cutting the edges of the inlay and disturbing it generally. and another objection has been, heretofore, that such stones or wheels as we have had are pretty sure to blacken the inlay. Therefore I had some very thin wheels made of corborundum vulcanized with white rubber, and you can see how thin the edges are. They are so sharp and thin on the edge that they will cut the necessary groove in almost any inlay without disturbing the fine edges, and what is more important is that being vulcanized with white rubber they leave no stain. The inlay goes in without any sign of being disturbed. After using these wheels some time they get a little dull, but if one will have a diamond, such as Dr. Delos Palmer uses for sharpening wheels and disks, they can be sharpened as one would sharpen a knife. For those who are not fortunate enough to possess a diamond. I would say if they will revolve the edge of the disk in a little dish of chloroform, the chloroform will sharpen it.—S. G. Perry, in Cosmos.

The Laboratory Assistant.—There is a custom so common that it seems sanctioned by long use, and under conditions a few generations back, was consistent; but in the changes and advancement of recent years it plainly becomes contrary to the spirit of our standard of right. I refer to the laboratory assistant. We find him a boy of about 17 or 18 years, coming to our office with no knowledge of our work, and in a very few months he is doing all the mechanical work. Now, if he can do this well in so short time, I see no ground for claiming it to belong to the class known as professional. It is however, entirely wrong to suppose

that he can do his work properly and with intelligence after such slight experience, and there is no other reason prompting the course than the commercial instinct—the desire to corner the unearned increment. It is even wrong to suppose that a man of mature experience can properly set up a plate for one whose temperament and facial expressions he does not know. Now, so long as we persistently lay claim to being professional men, is it not our duty to lift our laboratory work out of the common. cheap, slipshod, unartistic debasement of the present and make it a high art by giving it as much thoughtful care as is given to other operations? The proper office of a denture is to restore function and preserve facial comeliness. Does the average plate made by our laboratory boy do this? It may restore function to a degree, but the art is all gone out of it, and we are sometimes forced almost to a feeling of shame at the sight presented .- O. W. Brown, Indiana Dental Journal.

Weighting Lower Dentures.—Mr. Watson made a communication with reference to the weighting of lower dentures. He said: It is an idea I have for getting over the difficulty of those very movable lower cases that will not sit still in the mouth. The method is to make the cases almost of solid metal and cover them with a film of vulcanite. I use block-tin for the cases. You can get them heavier in that way and amply strong enough. Mount the case as ordinarily in wax, then take off and trim the piece till you reduce it to such a size as you want the tin to occupy, taking sufficient off the underneath portion to allow for a film of vulcanite underneath. That reduces the piece considerably, and having done that, you put it face downwards in a mould of plaster, smooth it off on the top, grease it, and pour on the other half. Then separate the two pieces, boil out all the wax, and make two little cuts at each end. Then warm the whole piece and pour the tin in. Allow it to cool, then open the mould and take the piece out. There may be one or two little excrescences which will require trimming off. Then take the piece and roughen it, put on a small layer of wax and adapt to the bite, cover all the metal with wax, and continue the process as though you were making up an ordinary lower case. In vulcanizing it is

sometimes a little difficult to get the rubber all over the case, but with care it can be done; if considered desirable, you can put in an iron wire strengthener, imbedded in the tin, which will not show if hidden close to the teeth. I have found these cases to fit tight and well.—Journal British Dental Association.

New Method of Using Amalgams.—Mr. Coxon showed his new method of making amalgam fillings, which he had been using for the last twelve months. The alloy from which ordinary amalgam was made was cast in an ingot and cut up into small blocks, varying in size and shape but with two sides parallel, so that they can be packed evenly.

The inside of the cavity is lined with amalgam, or, if preferred, with dental porcelain. The blocks are then packed into the cavity side by side, and amalgam not mixed too dry is used to set the blocks together in the same way that bricks are set in mortar, making the joints as thin as possible, the excess of mercury being squeezed out by a little pressure on the side of the block. It is advisable not to let the block reach quite to the top of the cavity, but about the sixteenth of an inch below it, so that the contour can be restored with amalgam made in the ordinary way.

The blocks were, before using, rubbed with a little mercury, which they readily took up, leaving their surfaces quite bright. This caused the amalgam to adhere readily to them, and when set there was one solid mass.

The advantages were that there was less discoloration and considerably less shrinkage than in an ordinary amalgam used throughout in a plastic condition. Contours could also be more easily built up than with amalgams made in the ordinary way. The amount of plastic amalgam required to make a filling was very small. Mr. Coxon showed examples of fillings made by this method that had been cut through the center, showing that there was no porosity in the joints.—Jour. Brit. Dental Assn.

Soldering on an Asbestos Wig. —Mr. Rippon made a communication with regard to soldering on an asbestos wig. He had intended to make a demonstration, but the facilities were not ade-

quate, and they would have to be content with his description. He would have liked to make a demonstration, because, when he showed the wig in the museum at the annual meeting at Leeds, along with several pieces of work done with it, several persons asked him how it was used. The wig was for light work, such as the making of porcelain crowns, or even crowns with metal backs. It did away with investing; that was beneficial to the worker. In making a crown, the root is trimmed down and post cut to fit the root. A piece of metal is burnished over the tooth and the tooth is then taken and fitted to the root and the post bent to adapt itself to the bite. With a pair of pliers the pins are made to grip the post. Where the bite is very close this is not easy to do, but I have never seen a bite where it could not be done. The great point is to have your porcelain tooth tight upon your post. Then lift it off the mould and snugly bury it in the wig. Then hold it over the Bunsen flame which is brought to bear upon it, and as the heat creeps up, you lower it till the tooth becomes hot. While over the Bunsen flame, the blow-pipe flame is brought onto the pins, on which has been put a piece of pure gold, and the tooth being between two flames, the gold is flushed in a moment. With this method you can solder a crown in a minute and a half. it does not only apply to crown work, if you have got your tooth backed you can turn the solder over the back without having to put it in the furnace, and the whole thing is done directly. In putting porcelain faces onto gold crowns it is very useful.-Journal British Dental Association.

CORRESPONDENCE.

DISCRIMINATION—THE CLEVELAND DENTAL SOCIETY PLACES ITSELF ON RECORD.

Editor Ohio Dental Journal:

Not long since some of the Cleveland dentists were approached by a representative of a publishing company, for the purpose of inducing them to take space in an art publication, which is to be printed and circulated in the near future. The album, for such it is to be, will contain the photograph, name and professional title of the representative men in all the professions and leading lines of business in Ohio. It is to be stated in the book that those whose pictures appear are the representative men in their respective callings. "A De Luxe Edition" is to be published for the exclusive use of the subscribers composing the album; the consideration to be \$15; also a large common edition for general distribution.

The project was presented to the dental men in a very smooth manner, and several of our oldest and most respected men were persuaded to subscribe and sign a contract. The dental profession in Cleveland was to be represented by eight men.

Later the gentlemen became convinced their action might be misconstrued, and looked upon as prompted by an ulterior motive, especially when it became known that some of the leading dentists, and some not so well known, had refused to have anything to do with the project upon the ground of professional ethics; also that there were more than the stipulated number of contracts in existence.

Nearly all the men who subscribed were members of the Cleveland Dental Society, and at the meeting of the society January 7, they introduced the subject in an informal manner, and asked for an expression from the society. The subject was thoroughly and freely discussed, although in a very friendly spirit.

The contracts will be annulled even should it be necessary to procure an injunction.

The consensus of opinion was crystallized in the following resolution, which was passed without a dissenting vote:

"Resolved, That we, the Cleveland Dental Society, deprecate the placing of any special stamp or value upon the professional position or standing of any member of our society, in a public manner, with his own consent."

[Note.—The above was accompanied by the written request for publication, signed by the president, secretary, and eight members of the Cleveland Dental Society.—Editor.]

TRI-STATE DENTAL MEETING.

Editor Ohio Dental Journal:

Since I have been a homeless editor with no place to lav my editorial head, except in the waste basket, the desire to write something necessarily for publication and not as a guarantee of good faith, is strong within me. I take this occasion to appeal to your generosity and call your attentionn to favors extended you by me in the past. Do you remember the nice things I said in the Indiana Dental Journal about your new cover when it first broke out? Well, then, publish my little letters and gratify my harmless vanity. It is rough on you and rougher on your readers, but think of my relief at being rid of them.

Did you know that the great Tri-State Meeting is less than five months off? Well, that is a fact. June 4, 5 and 6, is the time and Indianapolis is the place. So that June 3 will see the Genesis of an Exodus of the apostles of dentistry to this city that will be a Revelation. All roads will lead to Indianapolis during that week, sure. Ohio, Michigan and Indiana are "it." Now, we have not been talking about it much, but I may state to you on the quiet that we have our plans laid for a great meeting. Our contracts for the place are signed, sealed and delivered. All of the papers, clinics and exhibits, and entertainment will take place under one roof—and the roof don't leak. The number of papers will be strictly limited, but each one will be a star. If our essayists were on the vaudeville stage they would be billed as "the best in the business, that's all." And clinics! Well, they are "the best in the business, that's all!" But life is too short to tell you about all of the good things. It is enough to hint at them a little from time to time. We have set our figures on the attendance at 800. Of course, if there are more it will be all right. The hall will seat 1,200. By the way-a whisper-bring your wife with you. We are making arrangements to show her a good time. Don't forget the time and place.

Sincerely,

GEO. E. HUNT.

OBITUARY.

1862- IN MEMORIAM--1901.



ARTHUR CLARK COGSWELL.

On the 7th of January, 1901, at the residence of his father and mother, Mr. and Mrs. B. S. Cogswell, at No. 95 Dorchester avenue, Cleveland, Ohio, Arthur Clark Cogswell, in the prime of his years and in the midst of his usefulness, passed over to the silent majority. Aside from the shock and bereavement of relatives and immediate friends—too deep for words to express—occasioned by his sudden death, the sad sense of his untimely departure, in the wider circle of his acquaintance and in the community in which he was so well known, calls for a passing notice.

The deceased was born in the City of Cleveland, on the 21st of September, 1862, and he may be said to have been a resident of his birthplace from his infancy up to the time of his death. Except for temporary absences—some spent at Ithaca in the University course of Cornell, interrupted, however, by ill health, and a year passed at Pomona, Tenn., thereafter—the City of Cleveland was his home, the place where his affections centered, and whither his footsteps turned whenever he chanced to be away.

From his early manhood he was devoted to business in his native city, and was active, diligent and competent in its prosecution, having been so

early as 1885 connected with his father in the dental supply business (from that time carried on extensively), and since the incorporation of the concern, some ten years ago, having been its secretary continuously until the time of his death. And though devoted to business and thoroughly conversant with all the particulars of its routine, he was not unmindful, as the years advanced and his cares increased, of the calls upon him of social duty, and his other obligations to the community in which he lived and in which he was a great favorite. In the midst of an active business life—a business life not only active, but which might be characterized as enthusiastic—there was developed in him what does not always happen in like environment, an unusual taste for literature. He was a lover of good books; he bought them extensively, and with a rare discrimination, and enjoyed their companionship; and amid the cares of business the unmistakable marks of their companionship were not difficult to be seen in his modest, correct and unobtrusive conversation.

He was a member of the Chamber of Commerce of the City of Cleveland and of the Colonial Club, and was the president of the Gun Club of that city. The writer of this notice well remembers the tact and urbanity with which he presided over or participated in a social function known as the annual dinner of The Cogswell Dental Supply Co., given to a few of his friends at the Colonial Club on three occasions during the last three years.

In May, 1886, he was married to Miss Alice Buchan, a most estimable and worthy young lady resident in said city. They had long been acquainted, and the home established in this union is said to have been an ideal one. Kindred sympathies and tastes, and domestic graces and virtues, both acquired and inherited on both sides, dignified and adorned this household, and crowned it with happiness and brightness and joy. Alas! the young mother, too, is gone; and little Helen, now fatherless and motherless, is the sole survivor.

Mrs. Alice Cogswell died in February, 1899.

Mention has been omitted of what, prior to the death of his wife was so well known to his many familiar acquaintances, namely: His remarkably cheerful disposition, his keen appreciation of wit and humor, and whatever was beautiful, together with an abounding fund in himself of ready anecdote and pertinent illustrations at command, if so disposed. His inclination, however, was not to obtrude himself, but rather to give place to others.

The death of his wife was a blow to him, from the effects of which, though he strove to bear up bravely, it is thought by those who knew him best, he never fully recovered. Since that time he was unfrequent in society. There was not the cheerfulness of old; and time, which mercifully stretches out its softening and correcting hand to the afflicted, and is said to be able to assuage the bitterness of every sorrow, beckoned to him, it is thought, in vain. There was something exceedingly pathetic in this. Though the line of the centuries divided them in their passage to the land of shadows, they remain still not far apart.

Any notice of the death of Arthur Cogswell, therefore, however brief, would be sadly incomplete if mention were omitted of her who for almost thirteen years was a part of his inner life.

To sum it up, he was in one word a true man; honest, straightforward, truthful; diligent in business, faithful to every trust; a cultivated Christian gentleman; and he has gone to his reward.

Though to our imperfect understanding he might seem to have been cut off untimely in the midst of his years, and before he had accomplished his day and fulfilled the brightness of his promise—reminding us once more of the frailty of evanescence of human hopes and calculations—who shall say he has not, nevertheless, fulfilled the mission appointed him and fought the good fight?

Brave heart—good friend—for the present, Hail and Farewell! Yet there shall come another dawn, when it may be said then:

"Those angel faces smile

Which we have known long since and lost awhile."

W. S. K.

W. GEORGE BEERS.

Dr. Beers died at his residence in Montreal Dec. 26, 1900. In his death Canada loses one of her most prominent dentists.

Dr. Beers has for years edited the *Dominion Dental Journal* with tact and ability. He was opposed to shams of all sorts, particularly the so-called "quack" dentist, and in his many editorials on this subject there was no uncertainty as to where he himself stood professionally. He was prominent in dental society work, and was always interested in everything that tended to elevate the profession or advance the cause of dentistry.

We shall feel the loss of our good brother.

OHIO DENTAL JOURNAL.

VOL. XXI.

MARCH, 1901.

No. 3.

CONTRIBUTIONS.

USES AND ABUSES OF LOCAL ANESTHETICS.

BY P. J. WOOLSEY, M. D., D. D. S., BATTLE CREEK, MICH.

In justice to the local anesthetic question, I would like space in your valuable journal to say a few words.

Let us first, as practitioners, consider a few causes of diseased gums:

1st. Pus already formed in gums.

2nd. Where there is no pus but where tissues are so broken down that formation of pus is sure to follow.

3rd. Diseased and ragged bone around teeth.

4th. Poisonous drugs which have brought about diseased conditions, such as salivation caused by the abuse of calomel.

5th. Acquired or inherited diseases, such as syphilis, tuberculosis, etc.

6th. Foreign substances getting into gums after teeth have been extracted and where proper care has not been taken by patient.

7th. Septic conditions brought about by the use of infected

instruments.

8th. The introduction of anesthetic into mucous membranes.

Should any of the first five conditions exist more or less trouble is liable to arise, no matter what anesthetic is used.

In our judgment there is no anesthetic that will work perfectly on swollen gums, and if one is used the patient loses faith in the anesthetic and perhaps in the operator. It is better, therefore, to refrain from its use or else explain existing conditions to patient. In an already congested condition of the gums the introduction of any fluid can do no good and bad after effects may be looked for. It is in conditions like these that we administer nitrous oxide gas.

It is poor judgment to extract teeth when the first condition exists without first giving proper treatment, so bad after effects can generally be traced to one of the last three causes.

Of more importance than any of the causes mentioned is the lack of proper care on the part of the patient after extraction. Long rides home in the wind or rain, food and other foreign substances getting into sockets and gums are the causes of much trouble, and the dentist and his anesthetic gets "the cussing."

It is needless to the up-to-date dentist to call attention to the proper disinfection of all instruments used in or about the mouth.

The proper manipulation of the hypodermic syringe is no small matter. Get your anesthetic where you want it, keep it out of the mucous membrane, and avoid swelling and trouble. Press the finger firmly on mucous membrane at edge of gums and confine action of anesthetic where it is needed.

There are, perhaps, anesthetics on the market which in themselves cause trouble, but I firmly believe that much of the dissatisfaction with anesthetics can be traced to the causes mentioned in this article.

It is but just to mention chloretone, which, as a local anesthetic, I prize very highly. I read in your December issue a condemnation of this valuable anesthetic. I do not doubt the honesty of my professional brother from Ohio, but the bad results mentioned by him I am sure can be traced to some other

cause. The presence of pathogenic microbes already existing in the oral cavity must not be forgotten.

I have used chloretone with gratifying results both in operations for tumors and cancers of the mouth and face and in the extraction of teeth.

I find chloretone in some cases takes longer time to thoroughly benumb the tissues than some other anesthetics, so I use two formulæ, one where I am to extract several teeth and the other formula where only a few are to be taken out.

FORMULA NO. I.	
To sat. sol. chloretone add sodium chloridi	1%
FORMULA NO. 2.	
To sat. sol. chloretone add sodium chloridi	1%
Cocaine crystals	1%
Sulphate of atropin 1/16 gr. to fluid ou	ince

EUROPHEN IN COMBINATION WITH ROOT FILLING.

BY S. MARSHALL WEAVER, D. D. S., CLEVELAND, O.

In giving this suggestion to the profession the writer does not claim originality; for if I did, when talking to some older practitioner, he would undoubtedly inform me of the use of it for more than twenty years in his practice. Still, there may be some younger members of the profession who will be glad to have their attention called to a method with which others have been successful.

The preparation is made as follows: Take a large-mouthed bottle of colored glass, to exclude the light, break up a box of Gilbert's Temporary Stopping and add enough chloroform to thoroughly dissolve it, making a cream. Allow the bottle to remain open until the chloroform has nearly all evaporated, then add oil of eucalyptus to make it like soft butter, leaving the bottle open for the rest of the chloroform to evaporate. After this I add enough powdered europhen to make it like thick butter, or of a consistency so it can be taken out on an instrument without running.

This makes a preparation easy to manipulate, as you can take a piece and carry to place (as in upper molars) without

having it run off the instrument; but as soon as you commence to work it with a broach the condition changes to that of cream, and with the capillary attraction of the eucalyptus the preparation is introduced with wonderful ease. I introduce the square canal points as in ordinary methods, after using paste.

The advantages of the preparation are as follows:

Ist. Ordinary baseplate guttapercha in a solution of chloroform has a tendency to shrink on itself, as seen if the cork is left out of our chloropercha bottle. This you would readily see would have a tendency to draw moisture through the apical foramen to take the place of the chloroform which is absorbed by the tissue, for a vacuum could not exist under the circumstances. The Gilbert's Stopping, on account of containing a great deal of earthy matter, does not have such a tendency to shrink; but the shrinkage is cutirely overcome by the action of eucalyptus, it being a solvent for guttapercha, has the characteristic of clinging tenaciously to the sides of the root canals by the slight penetration into the tubulæ, thus closing all avenues for the ingress of foreign matter.

2nd. *Chloroform* is used *simply* to hasten dissolution, for owing to its highly irritating property it is not a desirable ingredient for root filling.

3rd. Eucalyptus does not evaporate to any great extent; is non-irritating to tissue (thus avoiding the pain caused when chloropercha is used); is a persistent antiseptic and very soothing to the tissue if a portion is forced through the apical foramen. This is especially noticeable in filling fistulous tracts.

In filling canals that are impossible to get through after sulphuric acid treatment I dessicate thoroughly and pack full of the powdered europhen, using a fine broach for the introduction.

Europhen contains 27.6 percentage of iodine. In contact with wound secretions it gives off slowly small quantities of iodine, which are immediately combined again, and form the soluble compound. Hence, if, after filling a canal with europhen, any secretions become present, the iodine is liberated and at once renders it impossible for the formation of bacteria.

If any reader has a suggestion or criticism to make the writer will consider it a favor to receive the same; for we are in the profession to receive and give alike.

"VACUUM CAVITIES."

A Criticism.

BY L. P. HASKELL.

The January and February *Items* have an interesting symposium on vacuum cavities, consisting of twenty-one articles by prominent dentists, most of them instructors in colleges. There is every shade of opinion from those who cannot succeed without them, to those who find no use for them.

The first is by Dr. Geo. B. Snow upon the "Philosophy of the Retention of Upper Dentures," which covers the ground completely, showing that it is adhesion, not suction, that is needed, and this is applied over nearly the entire surface of the jaw.

Another writer, a prominent educator, and who advocates strongly the necessity for the use of the vacuum cavity, wrote me in a letter in 1888, which I now have, to this effect: "Vacuum chambers are a relic of the past, and I believe and hope their day is nearly over. Vacuum chambers are unscientific, unnecessary, inadvisable, non-hygienic and injurious to the tisues," all of which I concurred in then, and have never seen any reason to think otherwise.

Another says (and right here hinges the whole thing): "I do not see how anyone who advocates relief spaces can object to vacuum cavities, for really there is no difference."

There is all the difference imaginable. The "relief" is not intended for suction; does not aid it; in fact, the plate adheres just as well without, provided it does not bear upon the hard center. It should cover the entire hard surface, except at the posterior margin, for the width of one-quarter inch, and without a defined margin, which would be essential for suction. The object to be attained is to prevent the plate rocking. It must be borne in mind that the palate is the only portion of the jaw that never changes, while the alveolar process does, especially under rubber, from its non-conductibility. Unless provision is made for this change by raising the plate over the hard center, it is only a question of time when the plate will inevitably rock, and then there is trouble.

Now, on the other hand, if a "vacuum cavity," so-called is used, it must have a well-defined margin in close contact with the membrane, so the air can be exhausted. The anterior and posterior margins of this vacuum rest upon the hard center, and when the ridge settles the plate rocks, and herein is the mischief of the vacuum cavity. So it does not do to affirm that the "relief" and the "vacuum cavity" are the same in effect.

When a *theory* is backed up by twenty-five years of experience exclusively in plate-work, following thirty years of use of the vacuum cavity, I can't see what further argument is needed, and if any one can show more difficult cases than my models indicate I should be pleased to see them.

The hard center is found in 98 per cent of mouths. In two per cent there is a *soft* condition, with usually a crevice. In these cases no relief is needed, but the plate is fitted to every portion of the surface.

SOME THOUGHTS ANENT THE THIRD MOLARS.* BY HARRY L. KING, D. D. S., WELLINGTON, O.

The wisdom tooth, dens sapientiæ, or, most properly, the third molar, offers the most puzzling pathological conditions of any tooth. Not even the bicuspid with its thin, narrow neck, and extreme contour, its unreasonable sensitiveness and liability to decay, and its frequent necessity for treatment, rivals the third molar in puzzling the dentist.

It is for this reason and also because I believe that we, as dentists, do not thoroughly understand the difficulties that arise from this tooth, or their proper diagnosis, that I shall offer these few thoughts.

There are two conditions in which this tooth appears as a disturbing factor. The first, which I believe the average dentist overlooks to a large extent, is in the unerupted condition. Too many cases of facial neuralgia and abscess are treated by physicians, sent to dentists, and by them returned to the physician, when a proper diagnosis as to an impacted third molar would have indicated a treatment which would have brought relief.

^{*}Read before the Lorain County Dental Society.

The x-ray has proved to be a valuable assistant in diagnosing such cases, but where one dentist can secure the use of the x-ray there are a dozen who cannot.

Some of the symptoms of this condition of unerupted wisdom teeth are neuralgia in the cheek muscles, extending to the eye and even to the forehead; quite often earache; in case of lower teeth pain extending to the neck muscles, causing difficulty in swallowing and even mild tonsilitis; pain in both jaws and perhaps in all the teeth; sometimes the pain will seem to focus in one tooth that is either perfectly sound or only slightly decayed. There may be swelling of the cheek, and the gum tissue will quite often be inflamed and swollen over the unerupted tooth, and also along the other molars, although these signs are not always present. Sometimes pressure on the gum under which the tooth is suspected to lie will exaggerate the pain. These symptoms may appear for a time, then completely disappear, giving the patient relief for a varying length of time, only to reappear in a more severe form. The lower third molar develops these symptoms to a greater degree than the upper.

If after the above symptoms the trouble is not relieved, more serious complications may follow, especially in the lower jaw. External swelling and tenderness will increase, it will become almost impossible to swallow, the teeth may close and jaws lock, suppuration, either internal or external, will appear and soon another victim is ready for the hospital where the true cause of the trouble is ascertained and relief given.

Now, do not understand me to say that we dentists cannot cope with these cases, for I believe by a little care and study that any dentist can correctly diagnose the cause of the abovementioned troubles, and also relieve if not entirely cure them. But I do assert that many dentists and nearly all physicians do not diagnose such cases correctly, and consequently they fail to relieve or cure them.

The lancet is the first resort when the diagnosis is completed. Lance deeply and relieve congestion, then ascertain the position of the impacted tooth. If it is nearly perpendicular, it

will probably come through the gum to its proper position in a very short time, especially if the lance be used daily. If there be suppuration, lance and extract at once, as a chance is thereby given to remove thoroughly the diseased tissue and cleanse the surrounding parts.

I believe it is generally recognized that we should get to the seat of the suppuration at once and have an opening large enough to remove the diseased tissue. I believe this is as important as it is to secure an opening for any abscess by which it can be treated.

If the tooth lies in a horizontal position, close against the second molar, it is best to extract the second molar at once, and the third molar will take the vacant place, when all the discomfort will pass, as if by magic. If this does not occur, the third molar itself should be removed.

Now I am perfectly aware that many dentists consider extracting an heroic measure, but I notice that when such cases reach my hands, it requires something heroic to give relief, and relief is what the patient wants and must have.

I wish to relate an experience of Dr. M. H. Cryer, who is now connected with the U. of P., and is, I believe, an authority not to be disputed. A colored woman, who had been treated for an abscess for months by a surgeon, who had operated externally by cutting to the bone and scraping that. When she came to Dr. Cryer she could scarcely open her mouth. He discovered an unerupted lower third molar and found that the superior third molar was occluding on the overlying gum tissue. He also found a cavity in the impacted tooth and putrescent pulp. The mouth could not be opened enough to remove the lower molar, but the upper one was extracted, and as that relieved the gum from the irritation of occlusion, the jaw was soon able to be opened sufficiently to extract the lower, which immediately gave an outlet for pus and afforded relief.

I have had a little experience in my practice during the past month with an unerupted lower third molar. A girl of sixteen came to me to have a lower first molar extracted because it ached. It was decayed on the crown, but not a deep cavityand the pulp was not exposed, and I could see no reason for extracting or treating it. Instead, I began looking for trouble back of the second molar and I found it. Gum tissue was sore and pressure on the cheek externally was quite painful. I lanced the gum freely and the pain disappeared for two days. I lanced again, and kept lancing twice a week, and there has been no trouble since. The tooth is showing through the gum now. And yet the physician whom she consulted before she came to me, sent her to a dentist to have the first molar extracted.

The second condition in which the third molar tooth causes trouble is when it is fully or partially erupted. Neuralgia is one of the symptoms in these cases, also swelling of the cheek and gums, and generally pain in some tooth beside the third molar. This is one of the misleading features. If the third molar is sore to tapping, you may count on that as being the disturbing tooth. If not, make an application of iodine and aconite to the gum of the tooth that seems to ache, and if there is a cavity, clean it and fill it with cotton saturated with oil of cloves and campho-phenique; at the same time paint the gum around the third molar with dental tincture of iodine, which is three or four times as strong as the officinal tincture. In a day or two you can easily decide whether the third molar or another tooth is causing the trouble. And when the third molar causes the pain, extract it at once. Don't wait for it to get better, it will probably get worse, it may suppurate, and all that time the patient is suffering. Extract it.

Only last week a man came to me to have something done. He had been to a dentist in another town, who had filled cavities in the first and second molars, and left the third molar, already suppurating, to get better before he could extract it, while the patient had lost sleep every night for a week. I removed the third molar (maybe the other dentist knew when he was well off and didn't care to undertake the job), and the patient has had no trouble since. Occasionally it becomes necessary to remove a second molar before we can extract the third, as in the case of some unerupted third molars. I had a case the other day where, in extracting a third molar, I brought the second with

it, as the top of the third molar had grown into a cavity on the distal side of the second molar.

One thing more, after extraction syringe the cavity thoroughly with listerine and warm water, equal parts. Instruct the patient to keep the cavity free of all food and after each meal to use a mouthwash composed of one part listerine and three parts warm water. This will keep the sockets clean and antiseptics and nature will perform the necessary repair.

I believe it is always wise to examine particularly the distal surfaces of the second molars after extraction of the third molar, that, if there be a cavity, it may receive immediate attention and save further trouble.

EXTENSION FOR PREVENTION.*

BY C. M. WRIGHT, D. D. S., M. D., CINCINNATI, OHIO.

When early in the summer I accepted the invitation of your committee to prepare a paper for this meeting of the Ohio State Dental Society, I exhibited a rashness of conclusion more becoming to a youth than to a conservative practitioner with a third of a century's experience, in giving as the subject of my paper the rather definite one, "Extension for Prevention." Your committee having passed through an interesting and exciting political campaign since that time, juggled with my title, and it appears on your program to-day as "Expansion for Protection." Either will answer as a subject for the remarks I shall ask you to kindly consider at this time.

As I understand them, they both refer to certain operative procedures, recommended by distinguished dental teachers, in the methods of preparing cavities in the teeth for filling.

I have had an undefined opposition to these methods, which require an extensive cutting away of contiguous tooth-tissues in the neighborhood of carious areas. The object of the cutting is to extend the borders between filling material and tooth, so that vulnerable lines and joints may be well exposed on labial and buccal, as well as on lingual surfaces, and that cervical joints

^{*}Read before the Ohio State Dental Society, December, 1900.

may be made under the free margin of the gum. The reasons for this being:

First. Because from recent microscopic examination, it has been found that the dentin, as well as the bordering enamel, is often far more deeply and widely affected than ordinary chairside observations have been able to show.

Second. That the margins of cavities, simply filled, remain in the same distinctive environment and recurrence of disease is liable at these places.

Third. That clinical observation has pointed to the history of operations. The small filling of gold or amalgam is often replaced in a few years by a larger, and this again in a few years more by a still larger, until the final filling has the dimensions recommended by this school as a first operation, by the extension of the original cavity walls.

Fourth. The prevalence and popularity of the doctrine, that by high-class and extensive operations we prevent recurrence of disease.

These are generally accepted as facts by most of us, and they may appeal to our judgment as reasonable grounds for the adoption of this extension for prevention, or protection, method of operating; and yet, as I remarked, I have been possessed by an undefined opposition, or feeling of repugnance toward the method. We live in an operative age. The subdivision of medical practice into specialties has centered the attention of classes of medical men on special parts of the organism, and brilliant surgical operations have become the rule. It would almost seem, when we visit the consulting and operating rooms of the specialists of a great city, that man was placed on this earth to be operated upon. The dentist, and many special surgeons, seem to view him only as a subject. His nose, and throat, and mastoid region were given him that he might be operated upon. The vermiform appendix, the tonsil, the ovary, were developed in the human organism for the express purpose of being removed by a skilful surgeon. The more operations the surgeon performs the more skilful he becomes, and the happier man ought to be. The medical man who does not perform atomics is not up-to-date, and does not succeed in the professional race. There are reasonable grounds for these high-class operative procedures. We are not always in a position to dispute the doctrine which makes curetting a fashionable necessity this year, and yet, from the history of equally fine surgical measures, we may feel confident that it will not be resorted to next year.

It is not so very many years ago since the great operator, Arthur, offered a complete system for the surgical treatment of teeth by skilfully devised separations, for the prevention of caries. It was logical, reasonable and fascinating, and the dental profession, generally, accepted his teachings. Now it is a matter of history only, and has been entirely abandoned by the operators of to-day—yet who will say that, in the proper place, and skilfully performed, it was not as successful as the author promised? To-day we protect with gold, and restore contour, and the question has been boldly asked: Does filling save the teeth? The most favorable answer has been: "Yes, for a time, longer or shorter, depending upon certain conditions."

Twenty years ago the lamented Webb, whose memory we revere as one of the great lights in the operative world of the last half century, wrote a series of articles on "The Definite Principles of Filling Teeth." I must have felt the same opposition at that time, that rises within me to-day, for I attacked these Definite Principles in an article entitled "Gold a Temporary Filling." Dr. Webb replied in a paper with the significant title "Gold a Temporary Filling, if Made Such," implying that gold properly applied and perfectly fashioned as a protective filling for carious teeth was or is a permanent operation. I have not seen these papers for many years, but the impression remains that Dr. Webb's Definite Principles would fit the "Extension for Prevention" doctrine of to-day, and as well as I can judge, the method or modification of it, forms the basis of operative instruction in every first-class dental college of the present time. I freely admit this, and recognize that the proposition that the more perfect the filling—with all that this implies—the better the chances are for permanence, is like an axiom in our profession. Yet it is a fact, that many imperfectly compacted, and poorly finished, and really inferior fillings, as far as mechanical skill and workmanship and material are displayed, seem to possess quantities

of permanence and interference with recurrence of disease, not possessed by neighboring and far more perfectly made operations. (Kirk.)

Just here it may be well to recall another accepted article of our dental creed-one which does not hamper other operative specialists. It is the question of materials used in our surgery. When the term "permanent filling" is employed by dentist, dental teacher, or patient, the idea of gold first, and amalgam next, is presented to the mind. A permanent filling-or gold, or amalgam or some combination of metals are interchangeable terms. A temporary filling means cement, or gutta-percha. I have long regarded these terms, "permanent" and "temporary." as misleading and very serious obstacles in the way of scientific progress of our profession. Who first introduced the terms, or when, in the dim ages of an ignorant past they entered the profession of dentistry, I do not know; but their universal establishment as recognized terms, applicable to the operations performed by the dental surgeon in his combat with disease, is certainly one of the distinctive misfortunes of our profession—a handicap in our race, that has hindered the profession from arriving at the goal that so many of our early prophets and wellwishers have predicted and desired for us. I mean a high and secure standing among learned professions. If we could banish these words, and the ideas that the words wake up, from the minds of dentists and patients, we would make a step toward higher progress worthy or the twentieth century. The same terms, "Permanent and Temporary," operated to the disadvantage of the fathers of the profession, in the department of prosthesis; so many of these early practitioners, in order to introduce themselves and their art, and to compete (possibly) with some brother dentist, were in the habit of extracting a lot of teeth for a patient, and making a temporary plate of silver for a small fee, or no fee, agreeing with the patient to make a permanent set on gold plate at the end of a year. The method was exceedingly demoralizing in its effects on the dentist-keeping him to the level of a tinsmith or jeweler; and to the patient, who was taught to dictate, and consider materials, instead of surgical and artistic service.

In operative dentistry, the same terms have marked us all, as with a stick of tar, and have kept us down, as a profession.

"I will fill this tooth with gold, for so much. This is a permanent filling," or, "I will fill it with a 'temporary filling.'"

Or, again, in a bill for professional services:

Kem A—One Gold Filling (meaning permanent)\$10 00
Item B-Two Amalgam Fillings (meaning a cheaper kind of per-
manence 5 00
Item C—One Temporary Filling 1 50
Why not ninety-nine cents?

The implication—the lesson taught the patient, is, permanent and temporary treatment of caries—the temporary to be replaced by the permanent at some future time.

My personal repugnance to the ideas which I have tried to make clear, in all fairness, in these pictures, may have accounted for "undefined" objections which I felt for the "extension for prevention" methods of operating. It smacks of the permanent versus the temporary; while all our teaching should be, that the cause of the disease is, in most cases, the only permanent thing in the case. About twenty years ago a dealer in dental goods from Berlin said to me, "What do you think of the honesty of a dentist who uses pink gutta-percha for filling teeth? The plate gutta-percha, I mean, at five marks a box. Isn't that pretty low down?" Just before that, all unconscious of the emphatic scorn of a dealer for a dishonest dentist who would employ a cheap laboratory material for filling teeth, I had innocently and publicly made the statement, that I believed that a dentist could take care of the teeth of 2,500 persons of all ages each year, with the minimum amount of pain and the maximum amount of comfort, using only pink gutta-percha as a filling material-provided, that he could have the intelligent co-operation of the 2,500 patients themselves. This co-operation implying an acceptance of the fact that treatment was temporary, and the disease chronic; that prevention depended upon a removal of the cause; that fillings do not affect the cause.

This was a bold statement, full of dental heresy—if I may use this expression—for a young man to make.

After two decades of continuous practice, I still entertain the same heretical opinion—though I have never been permitted, for various reasons, such as fear of public opinion, the habit of practicing in a rut, and lack of courage to face possible consequences to my purse—to prove my theory. The idea here expressed is the reverse of that of the method of "Extension for Prevention," because the "permanent" is banished and the temporary, simple and painless repair of waste tissue rises from the horizon like the morning sun, shedding beneficent rays of promise to all the world. The motto of an army of dentists practising on these saving lines would be, "Eternal vigilance is the price of —good teeth."

The more wearing and painful and extensive and difficult the capital operation on one tooth, with the possibility that it may last ten years, instead of the easy, the painless, the delicate and the simple operations on ten teeth that may possibly (nay, probably) require the same treatment in two or three or five years, seems to be the fixed authoritative method of thought and action and teaching of to-day for first-class dentistry; and gold-until we began to consider cosmetic and esthetic qualities—has been the only high-class material for these orthodox operations. One of the prominent arguments which holds gold as the first among so-called permanent materials, is, strange to repeat, because of the difficulty in applying it to positions in living teeth, or teeth in a living mouth—this very difficulty tending to increase the manipulative ability of the operator by reflex action, and coordinated with this is the secondary reflex good to the patient, who gets the benefit of the very skill, his or her endurance and suffering has helped to establish. What would we think of a surgeon in other fields who would employ only gold wire for ligatures, because the difficulty of its employment added to his skill, when he might employ silk or cat-gut, which are easy to tie?

Many years ago the elder Coffin, of London, abandoned all materials for filling teeth, excepting only Chlorid of Zinc. This attitude toward the profession and his exclusive and titled patients, on the part of a cultivated and distinguished dentist, made a deep impression on my mind. It seemed to me then, as it does now, that the move was in the right direction, and away from the hampering and demoralizing notion of permanency and the

narrowing orthodoxy that makes the ability to manipulate gold foil the standard of perfection in the dentist.

The prize-fillings of the graduating class of a dental college are finer mechanical specimens than the fillings made in daily practice by the experienced and often distinguished examiners, selected as they are from among the best urban operators. The new graduate then, is a better dentist than he will be in ten, twenty or thirty years of practice. The older man can accomplish these same fine mechanical results, built up as they are on definite principles, but he gradually ceases to do so. Why? Is it because, while still maintaining the orthodox in theory, he becomes emancipated in practice, and leans toward the heresy which I have tried to portray, and to perhaps establish as sound doctrine?

A couple of years ago I read a short paper before the Odonto-logical Society of Cincinnati, and proposed the following question: Suppose that for any reason you were compelled to select but one material for filling teeth—all teeth—which of the now known materials would you adopt? There were present some twenty members, who kindly gave the question their earnest attention and each man present answered for himself, and according to his judgment. Not one selected gold as the filling material that he could depend upon for "saving" all teeth. Finally, gutta-percha and the cements—the majority selecting gutta-percha, and the rest cement—temporary fillings, were selected as the real sheet anchors of the dental bark in the harbor of sarvation.

An incident of interest during the discussion was the astonishment of the younger members—some of whom had had but a few years' practice out of college, at the opinions expressed by the experienced dentists of that society. "It is so contrary to what we have been taught;" but was it not food for thought, or seed sown, that may spring up in due time and bring forth sounder professional doctrines for the future?

If the members of this State Society will lay aside for a few moments, all prejudice, and wipe out tradition with its potent influence on our minds, and consider *de novo*, each one for himself, his position toward this question, there may be a refreshing

revival of reason—the scales may fall from our eyes, and we may see, men as trees walking, as did the blind man whom the Savior cured—or in other words, we may begin as little children to see things for the first time, and form sounder judgments than have been possible with the scales of authority, of teaching, of proverbs, and of ancient laws, before our eyes. Let me place before the new eyes of thought these propositions:

Gold is a filling material, like lead or tin, for the temporary repair of tooth lesions.

A man may be a fine operator and an honest man, and employ only cement and gutta-percha in his practice, and charge good fees for his services.

It seems to me to-day, as it did years ago, that if we could, as a profession—as teachers and practitioners—see things from this standpoint, we could advance dentistry as a science and as an art, because of the more rational and scientific groundwork upon which the whole structure would rest. Then, the physical exhaustion from one form of manipulation would be lessened and we could bring less tired nervous energy to bear on broad questions of importance, as for instance, on diathesis.

Suppose that we could establish as a fact, the proposition of some late medical investigators, made independently of the views. first enunciated and published by Dr. Paul Gibier, on the influence in pathology of the prevalence of the alkaline, or, of the acid temperaments and dispositions. Suppose that we could say, trom a chemical standpoint, that all men may be divided into three classes, viz: the acid, the alkaline and the neutral, and that the first two comprise the majority of the sick, whose body-fluids appear to contain an excess of acids, as in the rheumatic and the gouty, or an excess of alkali, as in the strumous and tubercular: that the neutral, or those in whom there is a fair and proper balance between acidity and alkalinity are apt to be the healthy people. What a field of study would be opened to us in the line of deletic and systemic treatment in our specialty that we might be able to combat a predisposition to excess in either direction, in order to maintain the neutrality, which, if we could establish the fact, alone seems compatible with prolonged good health and

tissue preservation—whether that tissue be tooth, or gingival, epithelial or connective, vascular or nervous.

The idea of "permanency" then could be regarded as depending more upon the body fluids than upon extensive excavations with engines and tools. We could then announce authoritatively once for all, that fillings are not made as preventive measures; that other than operative procedures must be employed for prevention and that these must be found in constitutional or systemic therapeutics.

The efforts of the dentinal pulp in protecting itself from even minor traumatic or chemical irritations should remind us that even a small cavity of decay in a remote corner of a tooth becomes, in a sense, more than a mere local disease—for the organism is called upon to protect and repair, by modified cicatricial tissue in pulp and dentinal tubules, an injury to the periphery.

Have I said enough to make the picture that I have in my mind's eye, clear to you, and to offer reasons why I shrank from the "extension for prevention" proposition—brilliant and apparently reasonable as this method appears from the standpoint of operative therapeutics?

DISCUSSION.

F. A. HUNTER: In regard to the "Extention for Prevention," so-called, it is a very pretty theory, which is practical in some few instances, and if the advocates of that theory will say it is applicable occasionally I will agree with them; but when they lay it down as a rule it seems to me in the rough and tumble practice of daily life, when we are working on living patients our ideals cannot be carried out. Although practiced to a great extent by all of us, it must be governed by conditions, to lay it down as a rule I feel the same as Dr. Wright—it is carrying the thing too far. There are very few men in the profession who have the ability to perform these operations, even, as I might say, on a dead subject, much less on a nervous, irritable patient, who is alive to all the feelings we have. To enlarge upon the proximate surface of a small cavity with well defined walls, for the purpose of having self-cleansing, is in my mind carrying the mat-

ter entirely too far. I have nothing more to say, only to commend the paper.

DR. STEPHAN: We should not forget one moment that it is our life's work to extend to prevent, or expand to prevent. In every operation we perform we extend to prevent the inroads of caries or of disease. We cut away the diseased portions of the tooth substance and replace the lost parts of the organ in order to prevent it from following out some other more destructive course. I do not take it that the doctrine of extension for prevention is to be followed in the working of metallic fillings alone; it should be followed in the use of plastics or temporary fillings as well.

Extension for prevention does not necessarily mean cutting away a great amount of tooth substance in every case; our judgment is to be used in the case as in anything else. The writer has carried his idea to the cutting of the bicuspids and molars and in anterior teeth so that the labial, lingual and buccal walls or margins will be kept clean by the cheek and tongue. One lesson can be taken from this principle; we extend out knowledge from time to time, carrying the borders of our work farther and farther into the field of research, so we are able to perform our life work better. Therefore I think this paper is one in the right direction; it sets us to thinking, and consequently to expand. This doctrine also goes beyond cavity extension. We should restore tooth to its original shape, to take in contour as well, but there are many operators who fail to consider the question of rebuilding the natural contour of the tooth. The closer we cling to natural conditions the better our results will be.

I feel like thanking Dr. Wright for this most excellent paper; also for the paper that Dr. Johnson will give us. One extreme in each direction will give us food for thought, so we can better continue our work along these lines.

DR. H. HARRISON: There is an old colored adage, "Keep in the middle of the road." That is just what I think we should say here. I have enjoyed all the papers read here in the society, and yet there is that feature of the extreme in either direction that is dangerous. The simple fact, according to my idea, of the preparation of any cavity is simply to take away all the decom-

posed elements of the tooth structure, all partially degenerated teeth, and build upon that whatever kind of a filling. By simply taking away all that is absolutely decayed, thoroughly sterilizing, you have done all that is necessary before filling cavity.

DR. C. R. BUTLER: I do not exactly comprehend the position that Dr. Wright has taken in the presentation of this subject. It seems he has not taken the extreme either way, but simply emphasized the mistakes that had been made in some of our teachings and nomenclature. It seems that the benefit we are able to extend or bestow upon our patients, or the lack of it, is more within our grasp than perhaps we are disposed to think. A man who has been in practice as long as Dr. Wright and some others here present have learned that by some indescribable influence we make our patients just about what we please, or at least they learn when we are doing our best or simply compromising. I apprehend that there has been too much promised on the part of the profession. The idea of saying, "Now, that tooth is filled torever; it will last you your lifetime," etc. I should modify that by saying, if you don't live too long.

Some here have got the idea that Dr. Wright is attempting to make an explanation for the use of extension for prevention. But Dr. Wright does not employ that principle in his practice; he has seen the mistake of such practice and has heard so much of it for some time past that he really does not know which is best. The cutting away of good, sound tooth substance to replace with a non-vital substance he does not regard as prevention as some would suppose from remarks already made since the reading of this paper. He does believe, however, in taking away all the diseased portion of the tooth and in trying to put a patch there which will save the organ as long as possible. That is what we should all do and use less frequently the terms permanent and temporary. Patients in the old country get the idea that dentists are serving them temporarily, they expect to go and have their teeth stopped once a year, but Americans try to do a little better than that. They try to put in a filling which will last for several years; this is simply a modification of the permanent idea. To say simply, "It may last a life-time," is sufficient. What concerns us principally as dentists is to see how well we can serve

those coming to us needing our services so they may be relieved of pain and discomfort, and have these organs with which nature has provided them perform their functions in the best possible manner.

DR. WRIGHT closes discussion on his paper. Mr. President:-I have had the advantage of Dr. Johnson to-day; I heard his paper; he did not hear mine. I do not know that I have anything special to say in closing the subject. As far as my impression of Dr. Johnson's paper is concerned, I thought it was a most vivid description of a magnificent operation. It is to such men that our beloved profession owes its distinction, and it is to our operative skill that the American dentist is known the world over. While I am willing to admit that the very distinction which we, as a profession, have attained, is largely due (I won't say solely due) to our technical skill ,our manipulative perfection; and while I consider digital expertness a sine qua non of the dentist, I still have deep regrets that our fundamental doctrines are unsound; that the reasons we give for our fine operations are not true, and it is for this reason I raise my voice this morning against this blot on our otherwise spotless escutcheon. I do not stand alone in this position. Dr. C. T. Stockwell, of Springfield, Mass., lately read a paper before the Massachusetts State Dental Society which was published in the October, 1900, Cosmos, on "Prenatal Treatment of Teeth," in which in no uncertain sound he warns our profession against the unprofessional satisfaction it takes in fascinating operative procedures to the possible neglect of higher scientific culture. Dr. Kirk, in an editorial a month or two ago, strikes the same chords in his significantly earnest way. Every now and then we have these sentiments coming as warnings from thinking men, not from cranks. It is possible, however, that the mass of the profession are too prone to follow the glittering operations.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

IMPACTED THIRD MOLARS.*

BY FRANK FREYMANN, D. D. S., DYERSVILLE, IOWA.

I have had two cases of the third molar causing lockjaw, and after removal and treatment of same I excused the patients cured.

Case I.—Mrs. S., a farmer's wife, was brought into the office by a physician, who asked me to diagnose the case and see what could be done for her. She had been under treatment for four weeks, and her mouth would only open about one-eighth of an inch. She complained of soreness down the side of the neck and breast. Her breast was so sore she could not nurse her child on that side, which was the right side. She could open her mouth less every day.

I found the right, lower, third molar badly broken down, and gums swollen. The moment I touched the tooth with an explorer she shrieked with pain, and I concluded that was the cause.

To remove the tooth, I had to break the buccal wall of the first, upper, right molar away (which was all that was left, being so badly decayed). Even then I could not place my forceps on the tooth, so removed the second molar also. I was fortunate enough to remove the third molar at first attempt. After that I treated the sockets antiseptically, and in about five minutes' time she could open her mouth with less pain than she had for a month. In a few days treatments was suspended and patient dismissed.

Case II.—Mr. C., millwright by trade. This was a right, lower, third molar also. One of our friends, an advertiser of expert extraction fame, attempted to remove it two or three

^{*}From The Bur.

months ago, and failed in removing the roots. He succeeded in removing the crown entirely, though.

His mouth would open only about one-fourth of an inch, and it was a case of an abscess forming at the apex. I could not introduce forceps into his mouth, and he desired to have me reduce the swelling and pain before I e tracted the roots. I counter-irritated the gum with iodine, and had him place small pieces of ice between cheek and gum, and he went away feeling easier, with instructions to return the next day.

The poor fellow hadn't slept for four nights, and could eat nothing but liquid food.

The next morning he returned, looking and feeling brighter, for he had slept ten solid hours, and not a pain in his tooth. I used a counter-irritant for several days to reduce the swelling, and when he could open his mouth sufficiently I removed the root. I used cocaine as an anesthetic, and took my engine bur, removed enough process so as to assure a good grip with my forceps, and the tooth was easily removed. After several days of antiseptic treatment he was dismissed, pleased with what I had done.

A NEW METHOD FOR MAKING DIES.*

BY GEORGE A. COMTE, LOS ANGELES, CAL.

Perhaps the following ideas may be of some benefit to your readers, and with that end in view, I beg your indulgence.

In making metal plates the old method of obtaining a die has always been irksome to me, so for some time past I have been experimenting upon the subject. I have at last found a method which not only saves time, patience (which is quite a factor) and labor, but assures a perfect die in all respects. This method is especially desirable where there are deep undercuts, doing away with all "core prints." A plaster impression is taken of the mouth, but instead of "waxing up" the pieces, they must be set in place with some easy flowing cement. Ordinary cement, such as used in crown and bridge work, serves the pur-

^{*}From Dental Clippings.

pose admirably. Wax cannot be used for obvious reasons. After the impression and its fractured parts have been placed in their relative position the impression is boiled for 10 or 15 minutes in beeswax-such as may be obtained at any druggist's. While still hot, the surplus wax is drained off, taking care that none of the finer lines have been filled; the idea being simply to fill the pores of the plaster and prepare it for the next step. A piece of sheet wax-beeswax is the best-is built up around the tray to the height of the desired die. The whole is now givn a thorough coating of dry graphite, the difficult parts being reached with a fine camel's hair pencil. The tray and impression are now taken to the electro-plater with instructions to give them a coating of copper about the thickness of an ordinary visiting card. After this has been done, molten zinc is poured into the matrix thus formed. In order to avoid accidents it is best to set the impression in a dish of sand. This process gives a die that cannot be duplicated for accuracy, quickness, cleanliness and durability. In short, it is the ideal die. The copper deposit forms a hard surface which serves to strengthen the die. The counter-die may be made of any metal, as the copper surface will withstand a very high temperature. Though it takes some time to describe it, the whole process takes but very little time. I have my own plating solution and place the case in it on leaving the office at night. In the morning all that is necessary to do is to pour the metal and swage a plate. Try it some time. The results are most gratifying both to operator and patient. Any further information will be cheerfully furnished on application.

NOVEL SPLINT FOR FRACTURED JAW*

BY H. R. HARBISON, D. D. S., SAN DIEGO, CAL.

A man seventy-five years of age fell from his wheel, fracturing the lower jaw, just back of the twelve-year molar, on both sides. He wore full upper and lower perfectly fitting dentures. It was found by placing the plates in position and

^{*}From Pacific Dental Gazette.

bringing the jaws together the fractured parts came to place in good shape. I fastened the two plates together, in correct articulation, with fine silver wire, which I covered with cement.

The upper incisors were removed for the passage of food, the teeth were then replaced in the mouth and the fractured jaw carefully put in position—a leather splint was put on, known as the "Hamilton splint."

At the end of two weeks the teeth were taken out, thoroughly cleansed, also the mouth. On the right side union had taken place nicely. On the left, little, if any.

All was placed in position again. At the end of the fourth week both sides showed good condition, but the patient said it felt weak.

After cleaning the plates and replacing, the bandage was again placed in position and left two weeks more. At the end of six weeks the bandage was removed and the plates restored to their former position.

The old gentleman told me about three weeks ago he could not tell that his jaws were ever broken.

SEPTIC INFECTION OF ANTRUM FROM CROWNED BICUSPID.*

BY C. R. PRICE, L. D. S.

Case I.—R. M. came to me in January, 1899, with some swelling in the neighborhood of the second premolar and the first molar of the left maxilla. Patient also complained of a foul discharge from the nose, and brought a handkerchief with him to instance this. I suspected antral trouble, arising from the second bicuspid, and sent the patient to Dr. John Macintyre for examination through the nose. He confirmed the antral trouble.

History.—The patient had had the gold crown inserted on the second premolar root when an undergraduate at Oxford some six years previously. An osteo filling had also been put in a mesial cavity in the first molar a few months previously

^{&#}x27;From Dental Record.

by a London dentist. The patient was very loth to part with the crowned premolar, and at his suggestion I drilled out the osteo filling, but, as I suspected, found the pulp sound. The second premolar was extracted, and a fine silver probe at once passed into the antrum. The opening was enlarged with an engine drill, and ultimately a silver tube inserted, attached to the contiguous teeth. The patient was given an antral syringe and told to wash out the antrum with a solution of boracic acid. Matters progressed normally and satisfactorily, but at the patient's request the tube was not removed till May 7th. There has been no further trouble. The bicuspid root was split open, and disclosed a stinking pulp. The patient had no recollection of the pulp being devitalized. As a matter of fact, I believe it was not done.

Case II.—R. H. came to me in March, 1899, with the usual symptoms of antral trouble in the left maxilla. I sent the patient to Dr. Macintyre for confirmation of antral trouble.

History.—The first upper molar had ben extracted years previously and the second molar and second premolar had moved towards each other. The second premolar I had crowned in October, 1890, eight and a-half years previously, and had been perfectly comfortable almost up to the time of seeing me. I had followed my usual method of crowning at that time. Dressed the root till aseptic, and had filled it with osteo, and at the same time inserted a screw pin to help hold the crown. The second molar was filled, but the pulp was intact.

Treatment.—I removed the gold cap and drilled out the osteo from the premolar root, and, as I suspected, found the root septic at the apex. Wishing to preserve the root, if possible, I decided to drill into the antrum betwen the second molar and second premolar root. Later a silver tube was inserted, and the patient was given an antral syringe and told to use a boracic acid solution. The treatment was, I think, unduly prolonged, owing to the nervousness of the patient in manipulating the syringe. He lived in the country and used to go down to his medical attendant occasionally to have the syringe used. On one occasion they managed to lose the stop to the silver tube, and

the latter was then plugged with a strip of boracic lint. Later, the patient was having tea with some ladies in his garden, and catching his breath suddenly, he felt sure that the lint had passed into the antrum. And on examination I found this was so. I was just leaving for my holidays, so I told the patient to go on syringing, and see me on my return. One day, when syringing, he found some shreds of the lint had been forced into the mouth opening, and he, happily, managed to catch the strip and pull it out with a fine pair of dressing forceps I had previously given him. There was but little trouble after this. Finally the tube was withdrawn. The second premolar root was dressed and finally filled with osteo, without a pin this time, and a new crown inserted in October, 1899. There has been no trouble since.

Two lessons may, I think, be emphasized from these two cases. The first—not to crown a living tooth. This I have never done except in such a comparatively uncommon case as crowning a tooth for attachment of a small bridge piece.

The second, is to be most careful in ascertaining that the canals of the tooth to be crowned are perfectly aseptic and properly filled. I put the failure of the root filling in the second instance down to inserting a screw pin as well—a practice I have long since abandoned. I would observe that in the case of the live root, the trouble did not occur until about six years after it had been crowned, and in that of the pulpless tooth until eight and a-half years later.

THE USE OF POWDERED EXTRACT OF SUPPARENAL CAPSULES OF SHEEP AS A HEMOSTATIC.*

BY W. C. PEACOCK, D. D. S., ENTERPRISE, ALA.

Powdered extract of suprarenal capsules of sheep possesses peculiar hemostatic properties far exceeding any of the hemostatics in present use, and is of superior advantage to the dental profession.

^{*}From Dental Headlight.

We are frequently called on to perform some very delicate and complicated operations. The profuse hemorrhage renders them extremely difficult with the methods now in vogue, but with the use of this extract the difficulties of hemorrhage may be entirely averted. Besides acting as a safeguard against hemorrhage, it aids the anæsthesia by prolonging its effects, thereby rendering invaluable services in two very important capacities. The extract is destined to supplant nearly all other hemostatics, especially with the dentist and specialist, but its uses in dentistry only concern us. I have used it in several cases, and it worked like a charm. I was so much delighted with its effects that I was constrained to write this article, giving my experience with what I regard a boon to the profession.

In setting crowns where the gums are hypertrophied sensitive, and predisposed to bleed a great deal, also in applying the rubber dam in cases of hemorrhage, I have tested the absolute superiority of this wonderful agent. I will add that in all cases of oral surgery where hemorrhage is profuse it will act admirably. In excessive bleeding after extracting teeth, if properly used, it will no doubt check it immediately, though I have not had the opportunity of using it yet. In my judgment, after using this extract, we can operate without any fears of hemorrhage and may, with impunity, operate on those who are predisposed to bleed.

To prepare the extract for immediate use is a very simple process. We take a tablespoon three-fourths full of water, and hold it over a spirit lamp until it boils. We add enough boracic acid to make a saturated solution (be sure we add enough acid, not too much. When the water cools, the acid will drop out of the solution and make the mixture turbulent, if used in excess); then we add five grains of the extract while the water is hot, stirring it with a match stick; then filter, using filter paper. We have a clear, dark-brown solution.

The solution should always be prepared for immediate use, owing to its liability to decompose; though, if put in a clean vial and corked tightly, it may keep several hours. In order to

obtain the best results, be careful in regard to the details of preparing the solution. We first use our cocaine five per cent. solution five minutes before using the solution; then apply with cotton. It renders the parts entirely bloodless, also prolonging the effects of the cocaine, and materially lessens the chances and dangers of secondary hemorrhage, as well as obviating the excessive use of cocaine. I will add that I have not had any case of secondary hemorrhage where I used the extract. It is my opinion that the blood vessels are so well contracted that it necessarily takes a long time to relax, the process of dilatation is so slow that the time is probably passed for secondary hemorrhage before they become sufficiently dilated. This, however, is my individual opinion, gathered from what observation I have had. Future experience will demonstrate its correctness or incorrectness.

The extract is a harmless preparation, no deleterious effects following its use. I can with the utmost confidence recommend its use to the profession as being the ideal hemostatic agent, and will give entire satisfaction when applied, if the necessary precautions are observed in its preparation and application to parts. The power of the extract to prevent hemorrhage, its action to prolong anæsthesia, will no doubt commend this invaluable remedy to the profession.

ABUSE OF THE CLINIC.

In a paper read before the California State Dental Society, and published in the Pacific Dental Gazette, Dr. L. L. Dunbar has the following to say about clinics:—

For many years one of the most popular features of our annual symposium of knowledge has been prostituted by an unwarranted publicity that smacks so strongly of commercialism as to be a positive detriment to the work of the Association. I refer to the clinics. We have watched for several years the growing evil in connection with this department of associational work that is so contrary to established ethical methods as to cause grave apprehension for the future of our professional

position. The clinics should not furnish an opportunity for an unscrupulous practitioner to advertise himself, or call attention to his methods in the public prints and invite invidious comparison. They are, or should be, for the enlightenment of members of the profession, and, as such, can be of no interest to the general public, for, being largely of a technical nature, their details cannot be perfectly understood by the layman, and the intent and purpose of the operation is always misunderstood.

One thing that the newsgatherer never forgets to mention is, "that this is a specialty of Dr. X., for which he is renowned." No sane man ever presumes to doubt the object of this for an instant, nor to characterize it as it deserves, but, when it occurs repeatedly without comment or rebuke, realize the example to young practitioners and its effect upon their adherence to a standard of professional ethics presumed to be the bulwark of their new allegiance.

Every new method or new drug that has gained any notoriety through the public prints is readily used by some enterprising practitioner at a clinic where publicity can be secured and the same exploited for commercial purposes. It may be edifying to the reporter of some daily paper to be lectured to over a chair, and gratifying to the clinician who expects a free "write-up," but a report of the same the next morning is not instructive nor edifying to the profession, and, while serving the purpose intended, does not subserve the objects of the Association in providing such clinic. If we expect to maintain the dignity of our position as members of a professional association organized for the purpose of inculcating higher professional ideals, we must set our faces resolutely against the use of official positions in the gift of the society for purposes of personal aggrandizement and so effectually place the stamp of our disapproval upon the self-seeking clinician as will be a permanent object lesson to all who may be honored by such appointments in the future. The entire system of public clinics as at present practiced is demoralizing to young practitioners, who are thus taught that our boasted professional ideal is a sham, and that

wrong-doing can be practiced with impunity in the guise of associational work under the sheltering ægis of a presumed high-class dental society.

It requires no prophet to foretell the disaster that awaits the most effective educational arm of our profession if these things are continued. The rewards for real discoveries in the line of our work are great enough to satisfy the ambitions of any selfrespecting practitioner, if their promulgation is confined to the profession entirely and publicity in the daily papers avoided. Indeed, the exploitation of these commercially involves specious claims for success not warranted by experience, and places the individual adopting such measures outside the pale of professional recognition as a violator of the letter and spirit of the code of ethics made and provided for our guidance. The only way to avoid error in this direction is to inaugurate an entirely new system of conducting the clinics, and allow no one, clinician or officer, to misuse the prominence given him by the Association. As far as possible confine this feature of our work to members only and such invited professional guests as we may see fit.

If the clinic is to be educational in character let its benefits be one of the prerogatives of membership, and surround the service with every dignified professional safeguard.

BOXINGS.*

BY DR. GEO. S. ALLAN, NEW YORK.

My method consists of an inlay made of two shells of gold, an outer and an inner one, soldered together at the margins, the interior being filled with cement when in place. I make these inlays or boxes with the assistance of my laboratory man, and I think to do this work successfully and with little loss one should certainly have the help of an expert plate-worker. The first step is to prepare the cavity, filling the undercuts, if any, so that the impression-material will easily come out of it. It is necessary that the margins be especially prepared: they should

'Extract from article in International Journal.

be clean cut and smooth. I then take an impression of the cavity with modelling compound and hand the impression over to my plate-worker. I will here read a paper prepared by my plate-worker, giving his method of procedure after the impression leaves my hand.

"The model is made of plaster of Paris in the ordinary way. Use Mellotte's mouldine for making a mould of the cavity. Make a die of Mellotte's die-metal, using a piece of soft lead for the counter-die. Swage pure gold (30 American gauge) in the cavity. Great care must be taken in truing the gold to the exact margin of the cavity. This can be done in the mouth, or if the outlines are clear, it can be done on the die or model. Melt a small drop of solder in the bottom of the little cup or matrix, being careful not to let it flow on the margins. This will give it strength for handling. Burnish the cup in the cavity; see that the margins correspond with those of the cavity. Take an impression in wax or compound to get exact contour.

The thickness of the gold must be allowed for in the wax, to avoid the bite striking too hard. A die is now made as before; 22-karat gold is used, as it will stand wear better than pure gold. The two pieces are soldered together, the edges trimmed and polished. A few saw-cuts in the pure gold inner shell will be sufficient for the cement to adhere."

After the inner shell has been returned from my mechanical man I place it in the cavity and burnish the edges carefully, seeing that they fit closely at every point. I then contour it out with wax, getting the proper shape and articulation, and return again to my plate-worker, who proceeds as he has described. When the finished box is returned to me, with a file I serrate the lower surface, at the time filing through this plate so that in setting the cement may be forced in, entirely filling the box. After the box has been filled, a small excess of cement is placed on this under surface, the boxing pressed home, and the excess of cement squeezed out. I believe this makes a filling more durable than a porcelain inlay because there are no thin edges that can be checked off, and there being no danger of breaking, however thin the box. It is better than a facing, because the

margins are not liable to peel up, an objection I can urge to the facing. It is better than the all-gold inlay built up with solder, because with much less labor a perfect articulation is obtained without the grinding necessary in the case of an inlay of this kind or a porcelain inlay. I cannot state positively that this method is new; I only know that it is new so far as I am concerned.

PORCELAIN ROOTS FOR TEETH WHERE ROOT AMPUTATION IS NECESSARY ON ACCOUNT OF PYORRHEA ALVEOLARIS OR OTHER CAUSES.*

BY M. L. RHEIN, M. D., D. D. S.

The pulp is entirely removed from all the root canals, which are then permanently filled as far as the pulp chamber. The main large opening in the crown should be filled with some temporary stopping that can be easily removed. The next step is the amputation of the necrosed root by means of a fissure drill revolving in the engine. The patient is then dismissed for about four hours, and cautioned to keep the mouth as aseptic as possible by the very free use of a suitable antiseptic wash.

The entire amputated root is now covered with a thin film of paraffin, in order to allow for loss of substance due to whatever root absorption may have taken place. The impression of the root is now taken in two parts, as it has been discovered that by baking the artificial root in sections, shrinkage of the periphery of the root is avoided, and a much better facsimile of the natural root is obtained. This is done by first taking an impression of about one-half of the root. Two wooden pegs are placed at either end of the model parallel to each other so that the entire impression divided as it is in two sections can be easily separated. The pegs should be pointed so as to find their places easily. The model of the other half of the root is made by pouring plaster over the first model, which has been pre-

^{*}Extract from article published in Items of Interest.

viously varnished. The two parts are separated and the root removed from the plaster.

Two suitable pieces of platinum foil, having first been annealed in the electric furnace, are carefully burnished in the impressions of the sections of the root, and these form the matrices in which the porcelain is baked. The matrices are stiffened by baking a thin film of porcelain in them, and then reburnished in their original impressions. The baking of the root in two sections is now proceeded with in the same manner as if two separate porcelain inlays were being baked, care being taken to avoid porosity. Around a square platinum pin, which is to anchor the root, is burnished a thin piece of platinum, about 60 gauge, the ends of which are soldered to form a box The platinum box which is to hold the pin that enters the crown is placed in one section, which is not yet baked entirely flush. The pin should be held in the box while the porcelain body is being packed, and only removed just before this section is placed into the furnace, in order to prevent the box from being damaged. The box should be left protruding beyond the porcelain in order to enable it to be more satisfactorily finished.

In our first operations a platinum pin was baked in the porcelain. In inserting a root made in this manner, although the results have been satisfactory, it necessitated too much cutting away of the side of the tooth in order to bring the pin into the crown cavity of the tooth. This has been obviated by substituting the box for the pin. When the two parts are completely baked, the sides which are to come together are ground even so that they will form a perfect joint. The platinum is then stripped from the half not containing the box, and the surplus of platinum of the remaining matrix wrapped around the stripped half in order to keep the two parts in perfect juxtaposition, having previously painted the approximating sides with a thin film of fresh body. It is then placed in the furnace and the two parts fused together. All remaining platinum is now stripped from the root, and all protruding edges around the joint are ground away. The entire surface of the porcelain root is painted with a thin film of body and placed into the furnace for the last time in an upright position, and the heat is turned off just before the glazing state is reached. In broad roots, like the anterior roots of lower molars, two pins, and necessarily two boxes, will be found advisable.

Everything is now ready for permanently anchoring the porcelain root to the natural tooth. The old socket is thoroughly washed with a warm antiseptic solution. The artificial root being placed into position, and everything being thoroughly dry, the boxes are filled with cement into which the pins are placed having been passed through the crown cavity. The crown cavity is now packed with a suitable soft amalgam, which is forced between the artificial root and the natural stump, forming a serviceable joint. The gum in its efforts to shrink contracts tightly against the porcelain root, holding it firmly in position, and thus preventing the entrance of any extraneous matter. We have now replaced a disorganizing organic material by an absolutely aseptic inorganic material, which cannot be acted upon by oral fluids.

METHOD FOR CROWNS AND BRIDGES.*

BY W. A. SPRING, DRESDEN, GER.

I do not use facings except in front crowns, but carve and bake in one piece crown or bridge. Much time is saved and more natural crowns secured by this process. My method is as follows: A bicuspid root, for instance, is prepared as for a Richmond crown, except that the cap is of platinum and the pin of square iridio-platinum, No. 14 gauge. The pin, after being hammered into the shape of the Washington monument and soldered, is cut off, leaving less than one-eighth of an inch protruding. It will be easily seen that the shape of this protruding portion is right to retain the porcelain which is to be baked upon it. The buccal portion of the cap, which was already beveled to avoid showing the band, can be considerably more beveled at this stage by grinding. If the band is soldered with gold alloyed

^{*}Extract from article in Dental Cosmos.

with twenty-five per cent. of platinum, it is not necessary to lap it. This can be done with the ordinary blow-pipe. Soldering the cap and pin is as well done with pure gold. The cap and pin thus constructed is placed upon the root and a bite impression taken with modeling compound.

Before putting into the anatomical articulator, the inside of the band and pin must receive enough wax to permit its easy removal from the plaster model. After the articulator is opened and the wax removed from model and cap with boiling water, the cap must be heated in the furnace to evaporate any possible wax. Close's body is then placed upon the cap, enough to well cover the pin, and biscuit baked. As soon as it is cool, it is placed upon the articulator, more body is added, carved to shape and articulation, and baked to a finish.

My method of making a porcelain bridge is simpler than any I have seen described. After the platinum frame, consisting of caps, pins, saddle, and square bar of iridio-platinum, No. 14 gauge, has been constructed, a well-rounded portion of Close's body is biscuited upon it, taking care that it shall not be when baked quite as high as the articulation of the finished piece requires. This piece is now placed in position in the mouth, and a bite impression of modeling compound taken. After waxing the caps, it is placed on the anatomical articulator. After the plaster is hard, it is removed from the model, the wax boiled out, and the piece once heated in the furnace. It is now placed on the articulator, Close's body added, the teeth carved to articulation, and baked.

Allowance must be made in the size of the teeth for the shrinkage of the porcelain, but no allowance need be made in the articulation if the biscuit bake has nearly reached the occluding teeth. The end teeth should project, as the contraction is all toward the center. Such a bridge of four or five teeth can be carved in about an hour and baked in four minutes.

My method of crowning with porcelain a molar with an abnormally short bite is as follows: Having a lower molar worn nearly to the gum, I grind it a little shorter, and, after making the walls parallel, I band it with platinum slightly

alloyed with iridium. The band must be left as high as the occluding tooth will permit.

After enlarging the roots for the pins and grinding the center at the bottom of the pulp-chamber to secure a firm base, I fit pure platinum plate accurately to the surface, carrying it to the bottom of the pulp-chamber. A bit of modeling compound will hold this in apposition to the band so it can be removed, invested, and soldered. Then the pins are placed and soldered. This platinum base is now placed upon the root, and a bite impression taken. Two bakings are necessary to make a beautiful carved crown.

As will be easily seen, the distance between the occluding molar and the bottom of the pulp-chamber is quite enough for a strong crown, since the porcelain is inclosed in a strong platinum band. Once in the mouth, the band is visible only upon close inspection.

I think this crown is new.

SYPHILITIC INTERSTITIAL GINGIVITIS.*

BY EUGENE S. TALBOT, M. D., D. D. S.

A fifty-six-year-old woman was sent to me, November 16, by her family physician. I found her suffering intense pain throughout the superior alveolar process. The teeth of the upper jaw were all in place. Absorption of the alveolar process was marked and extended back from the cuspids upon both sides. The bifurcations of the roots of the molars were exposed. The alveolar process was quite thin over the roots. It had obviously been absorbed laterally as well as in line with the roots. Intense metabolic changes had clearly taken place at some earlier period. The gums and mucous membrane over the anterior alveolar process had a bright-red appearance. The gums were smooth, neither puffy nor engorged with blood, nor did they bleed upon touch. Teeth felt uncomfortable on occlusion with those on the lower jaw. Several of the inferior teeth

^{*}From article in International Journal.

had been lost. They had become loose and had been easily extracted some years previously. There was no pyorrhea. Her hair had dropped out some years previously, and was at the time of the examination very scanty. She had had joint-rheumatism for some years. She was neurasthenic. There was profuse leucorrhea. Application of iodine to the gums produced most intense pain. On consultation with her physician, we decided she was suffering with secondary syphilis. She was given potassium iodide and ordered to drink large quantities of water and to take ten grains of lithia twice daily. She began to improve from the beginning of the treatment in a marked manner. The pain ceased and the tissues are now nearly normal.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

Soreness During Pulp Removal in Canals.—To overcome the soreness sometimes observed when removing the last portions of a pulp in a canal, carbolic acid is often used. Menthol dissolved in chloroform has also been recommended.—*Stomatologist*.

A Superior Disinfectant.—Recent experiments by Burgess, detailed in the *Lancet*, show that biniodide of mercury, when brought into solution by adding iodide of potassium, is far superior as a disinfectant to bichloride of mercury as it does *not* precipitate albumin. Its germicidal power is vastly superior to corrosive sublimate.

To Make Broaches Smaller.—In opening up root canals the broaches are generally too large. Place the broach in the holder and lay it on a wooden block parallel with the grain; then rub a very fine file lengthwise of the broach. This makes a broach that will open a great many more canals than any ordinary broach made.—S. M. Weaver.

GUM TISSUE, TO GET RID OF.—Gum tissue often interferes with dental operations. It may be cut away, and kept out, and pushed away from the cervical margin painlessly, by using temporary stopping, gutta percha base plate, or gutta percha forced tightly up against it and filling the entire interproximal space, and allowed to remain for about ten days.—Stomatologist.

MANAGEMENT OF CHILDREN.—With very young children such instruments as the engine, clamps, and the hot air syringe should be used as little as possible, though in older and more reasonable children they may often be utilized with care. It is a good plan to begin by doing all the easy fillings first, reserving the more troublesome operations till the patient is more or less accustomed to the process. It is generally possible also, to do any work which has to be done to the temporary teeth at least, without applying the rubber, and the less often it is put on the better.—W. Collier, Dental Record.

Separating and Finishing Instruments.—Dr. Hahn, in *Quarterly Circular*, describes some new separating and finishing instruments. They are similar to narrow spatulas in appearance, and made in three widths of 1.0, 1.5, and 2.0 mm. They are made of soft steel and the blade can be bent with the fingers to any desired form, and yet the instruments will retain sufficient stiffness to offer resistance to slight pressure. Thus, one can cut away amalgam fillings, shaping to any desired contour, by bending the blade to the shape required, insuring no overhanging edges of amalgam at the neck of tooth.

To Reduce the Weight of Pull Upper Vulcanite Cases With Very Heavy Vulcanite Side-Blocks.—Before the waxing is completed note size of the space between blocks and cast. Fit into said spaces, extending from bicuspid as far back as thickness of the case warrants, an aluminum tube. The malleability of the metal permits of its being manipulated to conform to the desired shape. The ends of the tube, however, must be closed with a perfect-fitting disk of some material, and in packing must be well embedded in the rubber. An aluminum

casting can be made and used in the same manner as the tin casting above described, though obtaining opposite results.—

J. Clarence Salvas, in Dental Brief.

A SIMPLE AND QUICK METHOD OF FILLING A LARGE CAVITY IN A FRAIL TOOTH WITH PURE GOLD PLATE.—After preparing and shaping the cavity and bevelling the edges, take a piece of sheet tin about 26 gauge and restore the contour of the decayed tooth as accurately as possible. Take this tin pattern, and after flattening it out duplicate in pure gold by placing it on the plate and marking its outline with a sharp point. Cut this out and with pliers and burnishers fit it to the cavity as was done with the tin, then solder one or more anchors on the inside of the cap (which it now becomes) and cement it in place with zinc phosphate. In attaching the anchors use 14-carat solder, which flows by holding over a spirit-lamp.—Dr. Raymond, in International.

TREATMENT OF THICKENED GUMS.—In all cases of thickened gums, easily bleeding, dry them and paint them with compound tincture of iodine every other day for a week or two. Have the patient use a spray two or three times daily of the following:

Hydronapthal gr.	vv
Eucalyptol	17
Uil of Cloves	111
Alconol	26
dr i	11
Distilled water oz. i	v.

M. S.—Use it full strength as a spray for the mouth and throat.

It is a good plan to have a patient carefully rinse the mouth with a weak soda solution before using the above. If the membrane is red, or slightly inflamed, use a dilute solution of acetic acid 1 to 300 (common vinegar diluted will do.)—From editorial, Dental Review.

AQUA REGIA IN THE TREATMENT OF PUTRESCENT ROOT-CANALS.—Nitro-hydrochloric acid (aqua regia) does not corrode a steel broach further than a thin coating on the surface.

readily removed by cuttle-fish disk. In putrescent canals an effervescence is produced almost equal to that produced by hydrogen dioxide, carrying out and into the pulp-chamber the *debris* lodged in the canals. At the same time an elimination of free chlorin takes place, still further sterilizing and at the same time bleaching the tissue, leaving it nice and white after thoroughly drying out. The smallest possible quantity is sufficient, though the residue of any acid used in a root-canal should be carefully neutralized and the canals thoroughly dried before putting in a dressing.—*F. T. Hays, Dental Cosmos*.

TREATMENT OF INTERSTITIAL GINGIVITIS.—The medicaments used for treating the sockets, after thorough scaling, may be any suitable antiseptics and stimulating remedy, and even escharotics may be applied with advantage to destroy tissue and bacteria, and produce a healthy aseptic wound, this latter condition being the true fundamental princple of repair. writer's practice is to use five per cent, tincture of iodin in fifty per cent, alcohol, to which is added as much oil of cinnamon as will be held in solution by the alcohol. After the use of the instruments, this is injected into every part of the sockets with a hypodermic syringe, until the blood starts again; then the patient is discharged for one week or more. This treatment is continued until recovery of all the teeth is complete or the best stage possible reached; in any event, retaining all teeth as long as practicable. Complete recovery of all cases, however, is far from the writer's experience.—M. II. Fletcher, in American Medical Association.

Papain as a Pulp Digester.—Papain is obtained from the ordinary papaw, or carica papaya, and comes in a white hygroscopic powder that is soluble in water, glycerine, acids and several other substances, and it is absolutely non-poisonous. It is not a coagulator of albumin, and it is a perfect digester. In the experiments that I have made out of the mouth and those in the mouth papain has already been proven to be an absolute and positive disintegrator of the pulp. Here is the formula: Take one grain of papain, a drop of pure glycerol and a drop of

1-300 hydrochloric acid, and mix them together in a paste, and apply it to the dead pulp in a tooth. Mind you, I said a dead pulp, and I do not mean one that is one-half or three-quarters alive. The paste can be sealed in the tooth with oxysulphate of zinc, oxyphosphate of zinc or with gutta percha, and if left in the tooth for a sufficient length of time it will absolutely digest the pulp, disintegrate it, convert it into a jelly-like mass, which is easy of removal from the pulp chamber and pulp canals. This is a method that any of you can try. I would advise you in doing this, after you have destroyed the pulp with arsenic, cobalt or any other corrosive, to simply wash it with a slightly acidulated solution of water, either acetic acid, trichloracetic acid or any other acid, and then apply the paste directly to the remains of the pulp in the tooth, seal it and leave it for one week, two weeks or three weeks, according to the bulk of tissue to be digested, and you will find that you can remove it from the most attenuated and delicate root canals that are found in the human mouth.—A. W. Harlan, in Dental Review.

EXPERIENCE WITH HYPEREMIA OF THE PULP.—As a purely reflex condition, hyperemia of the pulp is rare. Not that reflexes are uncommon in hyperemia of the pulp, for it is quite the rule that the pain when excited is referred to another tooth, or the gum or other part more or less distant to the tooth. The establishment of a hyperemia of a pulp by reflex irritation having its origin in an irritation of another tooth-pulp is not frequently seen.

The following was a fortunate case: A gentleman presented, complaining of more or less constant pain following the taking of cold water into the mouth, the pain being located in a right upper first bicuspid which had been largely filled with gold for many years. The pain was stated to be of recent origin, and followed upon the filling with amalgam of a deep cavity in a right upper third molar. Isolated, and tested with cold water, the bicuspid gave painful response. The same pain was produced when the third molar was tested. The previous good behavior of the bicuspid, together with the history, warranted the entrance of the molar, which was found to contain

amalgam upon a sound dentinal floor, penetration of which revealed a pulp, gangrenous at one horn. It was depleted and devitalized, a process which resulted in the complete restoration of the pulp of the bicuspid to health, with its normal lack of response to thermal changes. The pathological changes would seem to have been the same that bring about tenderness about the foramina of emergence of the terminals of the trigeminus in cases of neuralgia, that is, the disturbance was a vaso-motor one.—O. E. Inglis, in Stomatologist.

NEW APPLIANCE.—I would like to present a new appliance. It is a very simple thing, and it was suggested in an antrum case. The patient had had an abscessed tooth. The abscess had voided into the antrum and from this had infiltrated the palate bone of the superior maxillary. It voided through several openings; one of them was particularly large, and when I first saw the case this opening had been enlarged by a physician and a cavity, which seemed not to have been understood as being the antrum of Highmore, had been packed every day with a wick-like material, probably saturated with some antiseptic. The packing in the antrum of Highmore did not answer the purpose, apparently, for each time it was removed it was covered with pus. The patient came into my care just one week before she wished to go on a journey which was to occupy about four weeks, and there arose the question of self-treatment during that time. Mild antiseptic washes were recommended, and I wish to mention that a solution of protargol was the one used with greatest benefit. It occurred to me that nothing would answer for the purpose of drainage and at the same time for stoppage of that opening in the roof of the mouth better than an ordinary small glass collar button. I found one of the right size that would pass into the opening, be caught at its head by the connective tissue about the opening, and inserted it. It was easy to insert and remove it, and it kept drainage well established. Upon the patient's return the edges of the connective tissue about the opening were scarified and drawn together by means of a silver-wire suture. The success of the button was gratifying. It raised the point in my mind whether, after all,

the operation for antrum troubles would not be more beneficial to both patient and operator if the opening were made through the roof of the mouth into the antrum of Highmore. I believe that it would be for several reasons. First, because the wall of bone which is penetrated is heavy, is more vascular, is more likely to heal thoroughly. Second, because the integument of the cheek would not interfere in the operation the degree that it often does when the opening is made buccally. While this is not the time to discuss operations in antrum diseases, I do take this opportunity to introduce the button as a new appliance. C. T. Gramm, Dental Review.

SOCIETY.

A LEGAL NOTICE.

Know all men by these presents that on the fourth, fifth and sixth days of the sixth month, in the year one thousand nine hundred and some Annie Dominoes, in the City of Indianapolis, State of Felicity, otherwise known as Indiana, with the Banks of the Wabash not Far Away, and several other Banks a good deal closer, there will be held, convened and, as you might say congregated, a galaxy, or assemblage, of practicing dentists, for the purpose of meeting, getting together, and associating themselves in conclave, to hear papers and discussions, see clinics and exhibits, and otherwise inform, enlighten, refresh, and amuse themselves, in a just and lawful manner, according to that clause in the Constitution of the United States which insures every citizen of this republic protection in the pursuit of happiness.

And know all you same men, by these further Christmas presents, that this is the third, tertiary, or ternary, joint or amalgamated meeting of the States of Ohio, Michigan, and Indiana, which said joint meetings take place or occur every third year, beginning at the commencement, and may be called triennial in their being, as well as triangulate. And, therefore,

as the first of these meetings, held at Detroit, in 1895, was, is, and will be known as the O, I'm meeting, and the second, held at Put-in-Bay, in 1898, was raised, and called the Mi O! meeting, be it hereby and hereon ordained, specified, ordered, and otherwise understood, that this coming Tri-State Dental Meeting of the States of Ohio, Michigan and Indiana, to be held at Indianapolis, Ind., June 4, 5, 6, 1901, shall be known officially as the O, Mi! meeting.

You are all invited to come and break bread with us.

If there is any further information desired that is not imparted in the above, it may be accumulated by communicating with GEO. E. HUNT, Chairman,

Indianapolis, Ind.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

Punctuality.—"Very few young men seem to understand the value of punctuality. It is a quality that a business man appreciates more and more every year of his life."—Garrett Newkirk.

APPOINTED STATE CENTURION.—Dr. C. D. Peck, of Sandusky, was several weeks ago appointed state centurion of the Century Road Ciub, of America, Ohio division. The appointment was made to fill a vacancy.

INNOCENTS ABROAD. —Doctor (to patient about to take a lavage)—
"Madam, if you have any artificial teeth, will you please remove them
before I undertake to pass the tube." Patient (after removing two plates
of artificial teeth)—"Will it be necessary for me to remove my glass eye?"

Something New in Dentistry.—There is a man in Cleveland. Ohio, who advertises himself as Dr. Prof. Sunshine, and although not a dentist, nor tooth extractor, he uses and sells a preparation which he claims will grow new teeth where old ones have been extracted, grow new crowns on old stubs and cause a cavity to fill up with solid enamel.

Manila, Dental, College.—A dental college has been established in Manila, Louis Ottofy, D. D. S., dean; Juan Arévalo, Licenciado, secretary; W. G. Skidmore, D. D. S., treasurer; F. R. Harkinson, D. D. S., Anna M. Sawyer, D. D. S., Lloyd R. Hawley, D. D. S., comprise the faculty. It has adopted the requirements of the National Association of Dental Faculties. We trust the venture will be successful. A medical section is also being organized.

A New Application of Calcium Carbide, the British Consul at Stuttgart states, has been discovered and may become of great importance in the future. It consists in the production of pure metals from their ores by means of calcium carbide as a reducing agent. The process, the Consul states, is very simple, the ores being mixed with carbide and then subjected to a gentle heat. In this way pure copper and lead can be procured from their respective ores, whilst several alloys can be obtained directly from various ores containing the necessary metals.

Novel Management of Clinics.—At the last meeting of the N. Y. Odontological Society a new method of managing clinics was inaugurated, says *Items of Interest*, and proved to be a tremendous success. The clinicians operated in the regular meeting room of the society, giving their practical demonstrations in the usual manner, after which those in attendance were invited to take seats while the clinicians, one at a time, orally explained the features and details of their operations. This not only made everything much more intelligible to the members and guests, but afforded opportunity for questions and discussions, so that instead of the ordinary clinic, at which only the lucky few near the chairs obtained any real information, the whole affair resolved itself into a most practical dental meeting.

GUTTA PERCHA SUBSTITUTE.—Hugo Schnieder, Strasburg, has obtained protection for the following substitute for gutta-percha:

Asphaltum	45	per	cent.
Resin	40	per	cent.
Spirit of turpentine	10	per	cent.
Linseed oil	5	per	cent.

After having brought the asphaltum to the boiling-point the resin is added, and when an intimate mixture of the two substances has been obtained the turpentine is added, and then the linseed oil. The mixture is finally well boiled.

A UNIVERSAL ANTIDOTE.—A writer in a recent number of the Pharmaceutical Era emphasizes the use of milk as a universal antidote applicable to most cases of poisoning. By its fatty matter and its casein, it protects the mucous membrane against the corrosive action of acids, alkalies, and other caustic or irritant substances. It not only coagulates under the action of acids, by combining with them, but it also yields a precipitate with most mineral bases, forming insoluble caseates. If precipitation does not immediately take place with a product having a given reaction—acid or basic this precipitate will appear through the intervention of another substance of contrary reaction. Dr. Crowzel proposes to add to the milk 5 per cent. of borate of soda. This salt is not toxic, and is employed because it precipitates as insoluble borates all the mineral bases, except harmless or slightly poisonous alkaline bases. The poison acids decompose it, seizing on the soda and setting free boric acid, which is less poisonous and less soluble. The mixture of borate of soda and milk is an antidote at once neutralizing and precipitant. It can be used especially with mineral poisons, although we must except evanids, ferrocyanids, ferricyanids, chlorates, nitrates, arsenites, arsen:ates and oxalates. Of these the first three are precipitable by a mixture of ferrous and ferric sulphate, while chlorates and alkaline nitrates cannot be precipitated by any offensive reagent. Arsenites and alkaline arseniates can be eliminated by magnesia. In any case no risk is run, and good may be done by giving milk with borate of soda to one who is thought to have been poisoned. It is the first thing to be done after emptying the stomach. If arsenic is suspected, magnesia should be given. If there are vegetable poisons, the best antidote is a 1 per cent. solution of permanganate of potash.—Medical News.

CAUSES OF LOSS IN WEIGHT OF PLATINUM.—The various causes of the loss in weight of commercial platinum when heated under certain conditions may be summarized under seven heads: (1) Platinum is dissipated when it is made the cathode for the spark from an induction coil, alike in air, in vacuum, and in hydrogen; the phenomena are purely physical or mechanical. (2) When platinum is heated in a Bunsen gas flame sufficiently reducing to deposit some carbonaceous matter on the platinum a loss occurs, and is attributed to some constituent of the gas. (3) The same takes place in the ordinary smokeless Bunsen flame. (4) Platinum is dissipated when strongly heated in a furnace for firing porcelain. (5) When heated in a combustion tube in air, and (6) when heated by an electric current the metal is affected. Edison noted in the last case that glass surrounding the wire became covered with a mirror of what he assumed to be metallic platinum, but that the loss ceased when a perfect vacuum was made. Berliner explained the phenomenon when he proved that platinum which had been exposed to air gave up gas when heated in a vacuum; that while doing so the metal was dissipated, giving a deposit on the surrounding glass cylinder; and that this ceased when gas was no longer given off. Hence, he concluded that the action was purely mechanical. (7) When platinum is heated before the blast-lamp it loses weight. This was observed when using platinum crucibles for the conversion of calcium oxalate into calcium oxide; the crucibles lost weight so rapidly that even an approximate constant weight could not be reached. Experiments show that the loss is due to the chemical action of oxygen, that certain elements are fractioned out of the impure platinum, and that the loss is not due to water-gas, as has been suspected. except in so far as this gas is likely to give a hot and strongly oxidising flame when used in burners having an air supply. The behavior of platinum when heated under the last five conditions may be explained by the hypothesis that a volatile oxide of platinum is formed stable at high and low temperatures, but unstable at intermediate temperatures, like the platinous chloride, PtCl2, of Troost and Hautefeuille. If, as is the case in the blastflame, the compound is swept away, the metal loses weight. If, on the contrary, the flame is a quiet one, as is the case when a crucible is heated in a Bunsen flame, and only a part of the metal is very strongly heated, the hypothetical oxide decomposes at once on emerging from the most strongly heated zone, and the platinum is deposited on the cooler part of the crucible, producing the molecular change of the surface, without gain or loss of weight, noticed by Erdmann and Crookes.—Jour. Amer. Chemical Society,

HOW WOULD-BE DENTISTS ANSWERED SOME OF THE QUESTIONS ASKED BY THE OHIO STATE BOARD OF DENTAL EXAMINERS AT A RECENT EXAMINATION.

QUESTION-Name the digestive organs and give the function of each.

Answer—The teeth and glands, etc. The teeth to grind it and the glands to soak it.

QUESTION-What are interglobular spaces?

Answer—Interglobular spaces are cavities made such by extraction of teeth.

QUESTION—What vital functions continue during sleep?

Answer-Respiration, cohesion and adhesion and assimulation of food.

QUESTION—Describe a neuron.

Answer—A neuron is a nerve nerves act as transmitters of impressions and cary sensations to the nervous center.

QUESTION—Mention the depressors of the lower jaw. Give their origin and insertion.

Answer—Temporal' facial' Buccinator' masseter Levator-labi superior ali ca nasi with their intersect.

QUESTION—What are the three main divisions of articulation? To which one does the teeth belong?

Answer—The temporo maxillary to which the teeth belong unite to form the inferior and superior maxillary bone.

QUESTION-Describe the antrum of Highmore.

Answer—The antrum located in the maxillary bone formed by the ramus of the jaw and extends to the condoyl neck.

QUESTION--What is an astringent? Mention three vegetable and two mineral astringents.

Answer—An astringent is an element or combination of elements that will build up tissue alcohol' aconite and Iodine Hypersulphate of soda and potassium monoxide.

QUESTION—What is the local action of chloroform when confined to a part so that evaporation is prevented?

Answer—Chloroform when confined will coagulate the elements of which will become separated.

QUESTION—What is the treatment of cocain poisoning?

Answer.—Bathe the mouth with a germicide and locian of carbolic acid and Iodine.

QUESTION—Mention two heart stimulants that act rapidly and give dose of each.

Answer-Arsenic one eighth of a grain Chloroform two or three drachms.

And yet this Board is denominated "a frost" because it has not passed more candidates.

Of the 72 applicants that have been examined only 27 were found qualified to practice dentistry.

OHIO DENTAL JOURNAL.

VOL. XXI.

APRIL, 1901.

No. 4.

CONTRIBUTIONS.

THE DIFFICULTIES OF PRACTICING DENTISTRY.*

BY W. H. WHISTLAR, M. D., D. D. S., CLEVELAND, OHIO.

Dentistry is practiced by two classes of people. One class looks upon it as a trade whereby money may be accumulated. They subject human teeth and jaws to all kinds of treatment, regardless of real ownership. Riot and ruin are often names inexpressible of the conditions found after such lack of consideration; riot, because of the wanton manner in which the work was accomplished; and ruin, owing to the dire results. Responsibility supposed to be guaranteed by a written statement of the stability of the work is discreditable. The general aspect of this class of dentists points to lesser morality and poor citizenship. It is true, however, that for the sake of necessity, seemingly men of ability are sometimes compelled to sell their services and become the servants of those who persist in questionable methods. This almost invariably leads to carelessness, and evntually they lose their respectability as well as skill.

^{*}Read before the Cleveland Dental Society.

It is my opinion that this class of men should not be designated as dentists, for, dentistry is comprehensive, and it should not be narrowed to commercialism. Dentistry is wide in its scope and meets a demand of humanity to overcome physical defects. It offers, if properly practiced, relief of pain and does not permanently injure or deform the dental organs; it adds expression to the mouth; articulate speech is enhanced; mastication is performed by useful teeth which have been prepared by the capable dentist, and, altogether, we find dentistry productive of much good.

The second class of dentists is placed in this realm of utility. Whilst primarily the practice is adopted for the sake of livelihood, yet concomitantly it awakens a desire to restore the natural organs or supply desirable artificial substitutes.

Dentistry is a science and an art in which many are called but few are chosen, proportionate to the number of people. It is, therefore, a desirable profession because of its opportunities, giving a means of a fair support, and, incidentally, it may be noted that dentists generally form a class of reliable citizens.

The practice of dentistry consistently demands that the dentist by physically able to perform his services. His physical strength is synonymous with his force of character, and his aims in life should be high, so that he may enlarge his scientific attainments and his art by their application. If his ambitions are low, his whole sphere of usefulness is depressing.

It is now useless to consider entrance to the practice of a profession through any avenue but that of an education designed for that purpose. This is specialized education, and the laity do not comprehend the exact need of the higher requirements necessary to fit one to practice dentistry until it is considered by the personal benefits derived from the hands of where the profession stood at that time, and then see what it skillful men.

Dentistry requires an admixture of a classical and scientific education, the scientific predominating, to prepare one to adequately comprehend and continue its practice. This is one of the stumbling blocks in our knowledge, namely, to recognize the truths that become scientific facts. A general preliminary education modifies difficulties by extending the comprehensive faculties.

Now, dentistry is a mechanico-surgical science requiring the finest conceptions of the art of utilizing the materials and forces of nature. The dentist is a scientific engineer, for he consistently builds bridges, erects dams against impeding decay, and changes the natural position of the teeth as no other bony tissue can be maneuvered. He therefore demands a specialized education, and this should commence with the high school studies in preparation for the dental college. We turn, however, to the fathers of dentistry in this county and perceive that we can still learn from their landmarks and the history they have made. They lacked this college education, but theirs was earned by the toil of years, and years gathering fragments by hard experience. For these men difficulties were constantly before them to be hewn down, and their practice was handicapped without previous training. The young graduate to-day has a foundation to build upon, his success is assured if he adds to his previous instruction, and he bends toward professional enlargement. The inspiration he received in college constitutes an important factor in his demeanor throughout life, and success is often to some extent dependent upon it.

One of the first difficulties a graduate has to meet is that of a location of his office. Here lies a serious problem, for, in one community success may attend his efforts, whereas in another failure results. His environment is everything or nothing in respect to practice. If he seeks friends among the disreputable his practice will attract that class. Personality leads to success or failure. One will find all kinds of difficulties if he treats his patients like a block of wood. The dentist must be warm-hearted and sympathetic in his feelings else he will lose his constancy in exertion.

Quite a large percentage of difficulties arise from the lack of equipment to perform the services well. A skillful dentist may overcome some of these defects by his ingenuity, but he considers complete equipment essential so that he will not be distressed in critical moments. In these essentials of practice it is perjury to one's conscience to claim to be a thorough dentist if not well provided. Along this line of thought it would be valuable to enumerate the many modern devices and their uses as well as abuses, but this paper would be too lengthy to do so.

It is my belief that office furnishings lessen difficulties of practice in so far as they tend to brighten our surroundings. Everything should be done to promote health. Holidays should be observed, and hours for practice limited as far as possible. Daily habits that make people nervous, as well as evil associates, should be eliminated. Habits of manner of operating increase difficulties, as, for instance, strained posture at the chair, or, continual negligence in arranging the head of the patient best suited for the purpose. Many improper habits of the use of appliances are continual defects in practice, which if they had not been adopted at the commencement of the professional career would have increased abilities and saved time. These things are noticed when business increases and the dentist finds one of his greatest difficulties is lack of time. He now discovers that to arrange his appointments and keep them from being encroached upon is one of the most serious problems. Indeed it is one of the greatest worriments we have to meet outside of special cases which require unusual study.

The practice of dentistry, ordinarily, is not difficult, but it is exacting, and produces a continuous strain upon the nervous system that is seldom met with in any other profession. The lives of physicians are, as a rule, much shorter than dentists. Upon good authority it is stated that dentistry is among the first vocations in which its followers average long lives.

In conclusion, gentlemen, difficulties are eliminated if we perform our duties with sympathy for our fellow creatures, give preciseness of service, coupled with energy and firmness which inspire confidence, and, above all, if knowledge and wisdom are the precursors of practice.

THE FILLING MATERIAL BEST ADAPTED TO THE CASE IN HAND.*

BY R. A. DINSMORE, D. D. S., CLEVELAND, O.

This topic has perhaps given rise to as much thought and discussion as any subject connected with dentistry, and while it opens a wide field for discussion, it is my intention to generalize only on the subject, rising from the child to the adult in my own practice; stating how I care for them in the various stages and conditions in which they come to me.

We, of course, labor under many disadvantages with the young patient as he first comes to us, and our operations are largely governed by circumstances.

For convenience of reference:-

Case A is a patient little subject with soft, chalky, broken, down teeth, but he quietly submits to their being prepared as we see fit, leaving no excuse for not using the material best adapted to the case. Under such circumstances I use the oxyphosphate cement, as it serves to strengthen the tooth-structure, and, at the same time requires little or no preparation other than a thorough removing of broken-down tissue.

When the case has gone so far that the teeth have become sensitive, or verging on pulp exposure, a coating of varnish, as an insulator, must be used. However, here, I believe, guttapercha more nearly fills the requirements. In fact, if I were left to choose but one material with which to save the deciduous teeth, I believe it would be gutta-percha, since it answers under so many different conditions,—its principal attributes being its non-conducting and non-irritating properties.

Next we have the pulpless tooth with the absorption of the roots, perhaps, taking place. Here I resort to a solution of chloropercha and aristole, filling crown with gutta-percha or cement.

Case B is a nervous, unruly patient, taxing the operator to his full limit, and often beyond it, in the end compelling him

^{*}Read before the Cleveland Dental Society.

to use a material least affected by moisture or interruption in the midst of insertion. Here, I believe, the slow-setting amalgam can be used with the greatest degree of success. In such a case, if the tooth be pulpless, I content myself with the chlorepercha and aristole solution, forcing it into place with a mat of asbestos, which serves as a temporary protection until the operation can be completed as seems best.

Now we come to the first molars of the permanent set, which, often being in a sadly broken-down condition when brought to our attention, present a perplexing question.

First we have to decide whether the tooth is to be saved permanently or only temporarily. In either case, however, the first operation is pretty much the same. We usually find the structure of a poor quality, which calls for the oxy-phosphate for the reasons previously mentioned.

Some of you would, perhaps, advocate the use of tin, which is good, but I do not believe it would put the tooth in as good condition, or as well prepare it for permanent filling. Should we, at once, wish to make a permanent operation I would combine with amalgam, that is—the oxy-phosphate and amalgam.

A method I frequently adopt in large fissures or crown cavities is to bevel walls down well with as little irregularity as possible, fit to this a piece of about No. 28 gauge gold, shaping by means of pliers to conform and articulate with occluding tooth. On under side of this solder one or more flat-headed pins, then filling cavity with oxy-phosphate of a consistency which will allow facing to be adjusted, quickly burnishing edges to place. This gives the appearance of a good gold filling, and in many cases, is stronger and more durable. Besides all this, the operation is exceedingly easy for patient, as well as for operator.

During youth capping the exposed pulp is accomplished with more success than later in life, but this subject has been freely discussed recently, besides, when it comes to a genuine case of exposure, I am afraid my percentage of success is not high enough to justify me in taking the time necessary to describe the method.

However, we frequently meet with cases where, if we removed all diseased tissue, we would probably have an exposure. Instead of removing this thin layer, I thoroughly sterilize it, placing over this a mat of asbestos sterilized with oil of cassia and aristol, and then I cover with oxyphosphate.

For root-canal filling I use oxychloride and oxyphosphate almost exclusively.

Coming now to the adult patient, and knowing as we do that caries of the teeth is due principally to acid products of fermentation, it is the all-important matter to determine how we are to counteract or meet these conditions.

Thorough cleansing, with the use of alkaline preparations will, to a great extent, rectify this condition, yet the acid condition we know to be a chemical reaction, and by the introduction of a metallic filling the tendency is to exaggerate this condition. Therefore, when we have, in the same mouth, different metallic fillings, we must adopt some method of protection against the galvanic current which is thus produced.

Insulation and proper judgment in not bringing the metals too near in contact with each other, are about the only means I know of to overcome the difficulty.

In the various conditions in which we find the teeth, I do not believe that we can select any *one material* as being *the best* for filling. It is, perhaps, the tendency of the more skilled operators to advocate gold as the most durable of filling materials, and here is where the baser metals suffer, for in skilled hands, tin and amalgam I believe to be far superior to gold, under certain conditions. But for lack of careful manipulation the blame of failure is thrust upon the material instead of upon the operator, where it frequently belongs. Therefore, the most important thing to know is what metal or combination of metals is best adapted to the case in hand. Here, perhaps, might come an exception, for every man knows what material he is best qualified or most capable of using.

Therefore if good judgment demanded a gold filling, requiring more skill than I possessed, I most certainly would use the material that I could most successfully manipulate,—thereby giving my patient the best service of which I am capable.

Do we not too often select at random as it were our material for a case? Possibly selecting whatever the patient may suggest, or be influenced from a remunerative standpoint, perhaps. At all events, not giving the matter the consideration its importance demands.

Between the ages of six and twelve or fifteen, I believe we should confine ourselves to the plastic fillings, to a grat extent, being governed in the selection by the patient. For instance, if the patient is remiss in the care of his teeth, and inclined to visit the dentist only when severe trouble drives him there, I would prescribe amalgam for various reasons.

First. Such patient considers the cost.

Second. In a patient so careless or indifferent the cements or gutta percha could not be trusted, whereas, with a more careful patient I have great faith in the use of tin, and oxyphosphate, as with either material we have little trouble with further decay. These materials serve through the trying period, and usually well suited for preparing the way for gold which we hope to make the final filling.

In proximal cavities of bicuspids and molars, when decay reaches to, or beyond the cervical border, I frequently use tin for about one-fourth of the filling, finishing with gold. I have used the tin and gold together, but electrolysis, which takes place by the combination, tends to soften or make a granular surface rather than to harden.

However, this may be due to lack of proper proportions.

All things considered, if the cavity can be prepared as we would have it, no metal or combination of metals will equal gold when manipulated by skilled hands.

For contour work the platinum and gold make a most satisfactory filling, both as to appearance and wearing qualities.

PROSTHETIC DENTISTRY.*

BY G. H. WILSON, D. D. S., CLEVELAND, OHIO.

While prosthetic dentistry has been very much discussed and abused in the years gone by, I believe the time is at hand when it will be more rationally considered, and accorded the noble position to which it is entitled.

To-day the profession recognizes four distinct divisions in the practice of stamatology—operative, prosthetic, surgical, and orthopedic dentistry. Each department overlaps one or more of the others, so that the lines of demarkation are arbitrary and not natural. The terms used I believe are the best that have been suggested, but we must recognize that general terms have been applied to specific uses. Operative can, if used in its broadest sense, be made to cover every remedial act in stomatology wherein an instrument or appliance is used. This would only leave diagnosis, prognosis and prescription writing not included in the literal use of the term, while they are an essential part of the meaning implied by our specific use of the word.

Prosthesis means, a restoration of, and literally would include all fillings, as well as crowns, bridges, dentures, velums and obturators.

We favor the term prosthesis rather than the new term proposed by Dr. Ottolengui, prosthodontia, because the latter term means restorations of the teeth, while the former is applicable to the restoration of the teeth or parts thereof, also of their associate parts. Prosthodontia is too limited a term, and I believe will tend to restrict our department of practice. I shall endeavor to show by this paper that art in prosthesis requires as much attention given to restoring the soft tissues as to the teeth, and thus incidentally prove that the new term is not as good as the old.

A good rule by which to decide what may be considered operative dentistry and what prosthetic, is in its relation to

^{*}Read at Ohio State Dental Society December, 1900.

the operating chair and laboratory bench. If the essential or major portion of an operation is performed at the chair, it is operative dentistry; if the essential or major portion is at the bench, then it should be considered prosthetic. The two remaining branches of stomatology are offshoots of the two fundamental departments under consideration, and need not be further mentioned. There has been some contention as to which department crown and bridge work belong, but now it is generally associated with the prosthetic.

As prominence has recently been given to inlay work, it has caused some discussion as to the department to which it belongs. The executive council of the National Dental Association, at its late session, recommended that it be classed as operative.—I demur against the decision of the committee, and believe the profession will in the near future support the protest. Inlay work is in the nature of enameled platinum crowns, and the larger portion of the work is done with laboratory appliances, and, judged by our rule, must be classed as bench work; hence prosthetic.

I know I have few sympathisers when I assert that prosthesis is the greatest and should be the most exalted portion of our profession. By that I do not mean mechanical dentistry, as so commonly practiced; I mean prosthesis, a restoration of the lost tissues, functions and expression, second only to work of the Creator, and that because of the substances of which the restorations are made and their inherent limitations. Prosthesis is the greater, because it requires more intelligence, patience, manipulative ability and skill than the operative and is fraught with such dire consequences when improperly understood and practiced. That operative dentistry is the most essential I would as strongly affirm, because it is conservative, and prosthesis must always be handicapped by the inherent defects in the materials and methods used for restorations. The operator combats the destroyer at an earlier stage than the prosthetist, and the larger number of our profession are capable of attaining reasonable success in the operative department. The prosthetic is greater because it must begin where the operative has exhausted its resources. All honor to the noble men who are doing so much for their fellow men through their operative work; but we do believe they have not conceived the importance of, or the possibilities of prosthesis. We ask the aid of our operators in developing this important branch of our profession, by sending patients and not casts to the prosthetist. I cannot take time to discuss the causes of the degradation that has befallen prosthetic dentistry in times past.

We deprecate the idea that has been entertained by so many that there should be a divorcement between the two great divisions of dentistry, and that there should be a special course of training for each. I believe the best interest of the patient will be conserved by the devotees to the dental art and science receiving a broad and liberal education upon the whole subject of stomatology, and after having pursued general practice for a time, specializing as their tastes and ability may develop. It is only by a course of this kind that the conservative possibilities of the operator can be appreciated by the prosthetist.

It cannot be truthfully said that proofhes is is more mechanical than operative dentistry, only that there are greater varieties of mechanical procedure, while it can be said that the talents of the fine arts are almost entirely confined to the prosthetist. He must have some of the sense of color of the painter, much of the modeling and carving of the sculptor, and the sense of proportion and harmony that belongs to all true artists. The prosthetist should be a student of mankind, both of the mind and material body, that he may vitalize and individualize his work.

The desire is to direct attention to the artistic side of prosthesis, but as we cannot follow this thought in all divisions of prosthesis without making too lengthy a paper, we will confine our thoughts to full dentures.

In supplying a patient with an appliance of this kind we must secure correct impressions; then perfect articulating models; select teeth that are temperamentally suitable for the

case in hand; when we must individualize and arrange the teeth; after we have moulded and carved the gum portion to restore the contour of the soft tissues we can reproduce all in permanent form, and we have the work ready for the practical test.

I have named six steps, no one of which can be said to be of less importance than the others. If we examine each step we will see that the mechanical and artistic are well blended. Impression, mechanical: Articulations, mostly mechanical, a little of art in the rough: Selection of teeth, purely art: Arranging teeth, art and mechanics, half and half: Carving gum, art: Reproducing in permanent form, mechanical.

It is not our intention to discuss methods and materials in this paper, so we desire only to impress the importance of mechanically correct impressions.

The next important procedure is to secure correct articulating models. These are as essential to the artist in prosthesis as the clay model is to the sculptor. The method described by our text-books of a base plate with a rim of wax built to contour of teeth and gums is the only true method. The idea of the "mush-bite," so-called, is preposterous.

The selecting of the teeth is truly an artistic operation, but I will admit, as it is usually done is a most inartistic procedure. It is artistic because it is primarily a mental process assisted by the eye. It is mental, because we presume the operator analyses the case, and concludes what the general form, size and color of the teeth should be. This must be accomplished by a thorough knowledge of the temperaments. The eye must be trained in color, proportion and harmony. Harmony is the one attribute that marks the true artist; without it being either inherent or acquired it is impossible for a man to be a successful prosthetist.

It is absurd to talk about reproducing nature, as the height of art in any prosthetic operation. Nature is so hedged about by environments that she is constantly producing monstrosities of greater or less degree. True art in prosthesis is producing what nature should have accomplished—that is, a harmonious

whole. Otherwise there would be no need for the orthopedist in the dental profession, devoting his entire energies to correcting congenital departures from the perfect harmony designed by the great Author of our being. Why should we insist that because our patient did not go to a successful orthopedist in his youth he shall continue the remainder of his days in as nearly the same abnormal condition as it is possible for art to serve him. We can modify and thereby harmonize all the associate parts and hence demonstrate we possess the true artistic sense. This is not a plea for undersize, white china, made in a mold, universal denture for all mankind; but rather that cultivated, refined dental art, which we believe all thinking men must concede is the most difficult and should be the most exalted department of our profession.

I am glad to learn through our dental dealers that in many sections of our country the gum section teeth are largely out of use; that not more than one set is used to-day where five sets were used fifteen years ago. May this good work go on until their manufacture shall cease. Some worthy members of our profession condemn all teeth made in molds, and would require a dentist to carve the teeth. I do not believe in this ultraism; there are too few artists in the world to supply the demands of prosthesis, and very practical results can be obtained where we have a large stock of single or plain teeth from which to select. The same argument might be used in regard to the sculptor, that he should quarry his own marble. The dentist should select his stock teeth as the sculptor does his block of marble. The marble must contain the inherent qualities that will permit the sculptor, to produce the beautiful and finished piece of art he desires. So the dentist must select the stock teeth that contain general form, size and color, that will permit the dental artist to grind, shape, polish and, perhaps, stain, to individualize, and, so to speak, vitalize them.

Arranging the teeth—we have remarked that art and mechanics are equally essential in this operation. If we have the knowledge of art implied in selecting the teeth, we certainly ought to apply it in arranging the teeth. Then in the

mechanical arranging of the teeth we must give attention to the laws of leverage or the denture will be a failure from the practical point of view.

Carving the gum portion, or restoring the contour of the soft tissues is of nearly as much importance as selecting and arranging the teeth. We have very little written and hear little said upon this subject, but it is the cause of many failures, considered aesthetically. To comprehend the great change produced by the loss of the teeth, and how to remedy the defect, we must know the changes in the hard tissues and the muscles of expression.

The alveolar process is designed by nature as the rigid support for the teeth, and when the teeth have been lost, nature proceeds to remove by resorption that process, until in time there is hardly a vestige of it left. We can readily understand that any muscles attached to the changing hard tissues must be more or less affected, and that when this change consists of a wasting of the substance, or putting the muscle upon a tension, it is hardly in the province of the appliance, the office of which is to pad out, to rectify. We must conceive that there are limitations to our ability to restore, and we must use care not to exaggerate the defect. It is fortunate there are but few muscles attached to the bones that undergo resorption, but enough, however, to permanently alter the expression of the face. The larger portion of the muscles of expression are under the control of the prosthetist.

Dr. Case informs us that the area of the face susceptible of change by the orthopedist is described by a line drawn from the lower border of the nasal bone, just below the malar process turning downward about the anterior border of the ramus of the mandible, then continuing forward to the point of the chin. This he designates the changeable portion and the rest of the face as the unchangeable or fixed portions. I desire to call attention to the fact that this includes the whole of the cartilaginous portion of the nose.

It is this changeable portion, and the whole of it, with which the prosthetist has to deal.

Resorption of the superior alveolar process causes the ridge to disappear as rapidly as the labial and buccal walls. The same principle holds true in regard to the inferior alveolar process.

There are eleven pairs and one single muscle that must be considered in the study of expression; several of these only need be mentioned, while others will require greater consideration.

The Orbicularis Oris is a constrictor muscle and has no bone attachments, so the only consideration we have to give it, in contouring a denture, is that it shall be held in an easy and graceful position, neither too tense nor relaxed.

Of the nasal group of muscles, the Compressor Naris arises in the upper part of the incisive fossa and is spread out upon the wing of the nose; its function is to dilate the nostrils. When the alveolar process recedes, it carries the origin of the muscle farther away from its insertion and puts it upon a constant tension, hence constantly dilating the nose. This condition we cannot overcome, but we should not add to the defect by making the plate so high and full at this point that it will increase the tension of this troublesome little muscle. The Depressor Alae Nasi arises in the incisive fossa lower down upon the alveolar ridge, divides it into two portions, ascending and descending; the ascending spreading out upon the septum and tip of the nose, hence the loss of the natural teeth causes a constant drawing downward of the tip of the nose. The descending portion unites with its mate of the opposite side, attaching to the underside of the Orbicularis, forming the Fraenum Labia. The descending portion is sometimes named Depressor Labia Sup. This name describes its action, and reminds us of the unfortunate effect of the loss of the teeth. and explains why the plate must be notched at this position.

The next four muscles we can group together. Levator Labia Superioris Alaeque Nasi, Levator Labii Superioris Proprius, Zygomaticus Major and Minor arise respectively from the nasal process of the Sup. Maxilla, lower margin of the orbit, and the malar bone. They are all inserted near

the angle of the mouth into the Orbicularis. The first draws the corner of the mouth upward and forward, giving the expression of contempt. The second draws the corner of the mouth upward, and the third and fourth upward and backward, used in laughing. These are important muscles of expression, but are not difficult to control, because their origins are relatively a long distance from their insertions.

The Levator Anguli Oris is a more important muscle arising from the cuspid fossa and inserted in the Orbicularis at the angle of the mouth. A portion of this muscle forms the buccal fraenum. The Buccinator, or bugle blower's muscle, arising from the alveolar process over the molars of the superior maxilla and is inserted in the corresponding portion of the mandible. This muscle is most decidedly affected by the extraction of the teeth and it is impossible to perfectly restore its contour, and sometimes an attempt in this direction will result in dislodging the denture.

The Depressor Anguli Oris arises from the oblique line of the lower jaw and is inserted into the Orbicularis Oris at the angle of the mouth.

The Depressor Labii Inferioris, or Quadratus Menti, arises inside of the preceding muscle and extends towards the symphysis and is inserted into the Orbicularis Oris throughout the lower lip. Often a portion of this muscle arises higher upon the alveolar process in the location of the cuspid fossa producing an inferior buccal fraenum. Because of the excessive development and high attachment upon the alveolar process of this muscle it is often very troublesome to so contour the lower denture as to produce a pleasing expression.

The Levator Labii Inferioris arises from the inferior incisive fossa and unites with its fellow of the opposite side, forming the fraenum of the upper lip, which must always be provided for in contouring the plate.

The Platysma Myoides and other muscles are also considered muscles of expression, but are of no consequence to the prosthetist.

A study of these twelve muscles named will aid in giving

us an intelligent idea of the required contour of the gum portion of an artificial denture. It is also necessary that we study in connection with the muscles the surface markings of the alveolar process while the teeth are in situ.

The most prominent marking is the cuspid eminence immediately over the cuspid tooth, and directly under the Levator Superioris Proprius, and is necessary for the contour of this muscle. Immediately back of the cuspid eminence is the cuspid fossa, occupied by the Levator Anguli Oris muscle. In restoring the cuspid eminence it must be carried as high as possible, then dropped abruptly to accommodate the angle muscle and represent the fossa.

In front of the cuspid eminence is the Incisive Fossa, most marked over the lateral incisor. If we do not represent this fossa we exaggerate the effect of the muscle of contempt, dilate the nostrils, depress the tip of the nose, and give a bulging curve to the lip, in the median line.

It has sometimes been said that all there is in giving contour and expression to an artificial denture, is to produce the cuspid eminences. True this is a very important and universal feature, and any soul, no matter how devoid of artistic sense, can see this necessity; but if we desire to be classed as artists indeed, we must continue our studies and untiring efforts, until we can work with the great Creator in producing the "human face divine."

DISCUSSION.

Dr. G. Molyneaux: The paper presented by Dr. Wilson is certainly one worthy of a most careful and serious consideration. If the prosthetic department of dentistry is ever credited with the noble position to which it is entitled it will only come through a rational consideration of the subject. A careful study of the underlying principles of prosthetic dentistry, their promulgation and subsequent exemplification, by only such apparatus as will best meet the desired end is the only hope. We too often expect apparatus to protect our

ignorance of the subject. If we err in judgment through ignorance, no apparatus will make our work successful. The abuse of this department came largely through ignorance of principles, a devotion to mechanics, or the jewelry work of dentistry.

The essayist has placed prosthetic dentistry as a department of stomatology, which I do not like. He has objected to prosthodontia, as suggested by Dr. Ottolengui. I agree with him in his reasons for not accepting a term that governs with it no special significance. Stomatology has no place in dentistry at present. It is a word specialized by the medical profession and refers by various constructions to the word "stomo," meaning an opening, to pathological conditions of the pores or cells of the nucous membrane lining the mouth and pharvnx, and is not used in any other sense except by a few dentists. Prosthetic dentistry is a department of the practice of dentistry and the essayist refers to it as such, except in the preliminary distinction. Instead of dividing the subject of dentistry into departments with some obscure nomenclature, let us divide the subject against itself. He places operative dentistry as chair work and prosthetic dentistry as bench work; so long as this distinction exists so long will prosthetic dentistry occupy the very narrow sphere as suggested by essayist. Dental prosthesis is one thing, the exemplification of dental prosthesis through dental mechanics is another. Dental prosthesis and dental mechanics is a division of the subject that must sooner or later come into general use.

A good impression, the essayist says, is the foundation of the denture; I say the same. But how many of us take what we think a good impression because it resists the effort of removal, and think the problem is solved. Unless an impression represents the tissues covered in their natural position of repose, every inequality of the ridge, or palate, every duplication of mucous membrane defining the limitation of base of denture without trimming is not a good impression no matter how forcibly it resists the effort of removal. It is impossible for me to attempt a full discussion of the matter of impressions

of the mouth, articulation of teeth, angles of force, etc., at this time, but I do hope to present some thought on these lines very soon. Art in dentistry so far as cosmetic purposes is required is not essential. It is, however, expected to be coupled with other good qualities of the denture. The essayist says true art in prosthesis is producing what nature should have accomplished, but this is apt to be misleading unless qualified. There are times when dealing with young patients that we resort to mechanism for cosmetic purposes, when orthopedic dentistry is out of the question. But when we are dealing with people past middle life that have been recognized with certain unusual characteristics, such as protruded lower or upper maxilla, and these patients have lost their teeth, requiring artificial substitutes, we should not eradicate their characteristic expression. A restoration of their natural expression is art, but to make them look like some one else is not art. We are not all capable of expressing art from a cosmetic standpoint in artificial dentures. Environment, clientele and diverse other matters prevent this true expression. We are not, however, excusable from ignoring the laws of hygiene in making a denture.

The essayist refers to a wasting disease of the alveolar ridges; have we not solved the cause of this trouble? Is it not possible that under certain conditions natural teeth are retained too long? Is it not possible that many times a poorly constructed denture is the cause of resorption of the ridges by functional interference? Who is to solve these questions of so much importance, the bench workman or the intelligent dentist? The prosthetic department of dentistry cannot at this time be divorced from the guiding integrity of the observing dentist at the chair. If we turn our patients over to the laboratory man to have impression taken and work done we cannot expect very much for the denture. The intelligent dentist must guide the mechanic and start him, and must see that everything is carried out correctly, must judge as to best means of protecting mouth, preserving ridges, if possible, for the time being, as the wasting of the process is an important

question. This work, it seems to me, is just as truly ennobling as any part of dentistry I know of.

Dr. H. M. Kirk: It was said several years ago that in the study of dentistry the mechanical side was the basis. This is true, I think. Mechanical skill and mechanical ingenuity are largely a mental development; no matter how much dexterity you have in the fingers or how much manipulative skill unless they are associated with good judgment and proper knowledge of what is best for each case, they are useless.

So I think the doctor was correct when he said that the same mental and manipulative faculties were used in both mechanical and operative dentistry.

I will agree with the essayist that prosthetic dentistry is a largely abused and neglected department of dentistry and there is no reason why this should be. It is just as lawful, just as honorable and just as noble as operative, and it is also just as remunerative, and there is no reason why it should be considered less in degree than operative. Of course, prosthetic dentistry is laboratory work, but it is easier than operative, can be done at odd times, and while sitting down, but yet many dentists say they do not like the laboratory work, while at the same time they are more than glad to go into the laboratory and work on crowns and bridges, and they are highly elated to have all this work they can get, although it entails working in the laboratory.

I think the true reason why prosthetic dentistry is neglected and abused is because the dentist is unsuccessful in the building up of dentures and in their proper adaptation to the mouth. They lack this mental development. There are certain principles of mechanical laws which are involved in the setting up and arrangement of teeth, in the articulation, in the trimming of the plates, and whether or not there should be a relief chamber, etc., which are very important and which are overlooked by a large number of dentists. For these reasons they are unsuccessful, and therefore get no enjoyment out of the work.

The essavist speaks of gum teeth of their not being so much in use as some years ago. We all know the advantages and disadvantages of gum teeth. Occasionally they are very useful, but they have been very greatly displaced by the plain teeth. The reason, I think, is because of their poor shape and difficulty of putting them up in a natural looking denture. Dr. Haskell said, "The reason teeth are not of better shape is because the profession do not demand it. If they wanted better forms they would be manufactured for them." So it seems the dentists are to blame. The biscuspids and the molars are the greatest offenders, they are not broad enough on the grinding surface and it is impossible to Bonwill the teeth. It is wonderful what we can do in restoring the expression and intelligence of the faces of our patients, but as long as dentists will continue to make plates and set up teeth without any attributes of the natural teeth prosthetic dentistry will hold the place it now has. It is true that the majority of people will flock to these sign-emblazoned offices and to these modern dental monstrosities, but we must educate them to the importance and value of good work in prosthetic dentistry.

Dr. Ruggles: There is one subject which comes up in connection with gum and plain teeth. I would like to ask which is the better to use in setting up plates? In the plain teeth we can by grinding them in different ways set them up to look irregular and more natural, while with gum teeth we are compelled to grind them in only the one general way. Now, which is the greater disadvantage to have the rubber showing and the teeth set up irregularly to look more natural, or have the teeth set up perfectly regular with the porcelain gum.

Dr. Kirk: In reference to Dr. Ruggles' statement, there are some cases where we are compelled by the nature of the case, the shape of the mouth, shortness of upper lip and length of gum, to use gum teeth. If this is not necessary the use of plain teeth is advised. So I should say use gum teeth only in those cases where we cannot use plain.

Dr. Stephan: There are some very valuable points, are one especially of the restoration of the face or movable parts in placing in an artificial denture. I think the point of restoring the cuspid fossa to its natural shape and also the incisive fossa, that just above the lateral incisor, then receding over the bicuspids, these are all valuable points and should not be overlooked. Another point, of the selection of the proper teeth fo each case, this requires a great deal of study, and it should not be done in a hurry, but with carefulness and consideration.

Dr. Wilson: I think if we all understood each other perfectly there would be very little difference in the understanding of prosthetic dentistry between the discussors and myself. It is always the object of the first man who speaks to create a discussion and I think that he made a few stronger points in some respects than he really believes. One point, he said that we should supply what Nature should do, restore the natural expression. He immediately followed that statement by the very expression I used in the paper, "we are not to follow Nature, but make them look like their natural self." Nature changes from year to year, so a patient becomes an unsightly creature after a while, shall we keep them in that same condition? There is no thought of art in that at all. I make no plea of having an universal set for each person. And an ideal form is not what I mean, but to harmonize. If the teeth are all out of alignment, due to extractions, pyorrhea, etc., the work of bad operating, probably, should we keep them in that same condition? (That is restoring their natural expression?)

Not at all, nor should we have a set of teeth representing patient sixteen years of age when they are sixty. The thought of harmony should pervade the whole thought of dentistry, otherwise there is no art in it.

In reference to the term, "Prosthodontia," I don't like riveting our minds completely upon the teeth, when we as dentists can see beyond the teeth, then we can call ourselves professional men, but when we have that one narrow thought of teeth we are simply mechanics. The whole facial expression., etc., is to be considered, that is the reason I don't like "Prosthodonita." Prosthetic Dentistry is also just as bad. Stoma is used to mean the mouth, the first thought is probably of the stomach, and when we learn it means the mouth it is not pleasing at all, but I think it is better than any word we have at the present time. We call it "Stomotology," it covers the whole thought of the mouth and its surroundings, gums, palate, tongue, nose, etc. I think the word is much better than the terms above mentioned and will use it until some word which is more appropriate is found. I grant that it is not euphonious at all.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

ATTACHMENT FOR INLAY AND BRIDGE-WORK.* BY J. P. CARMICHAEL, D. D. S., MILWAUKEE, WIS.

I wish to draw your attention to a plan of attachment for bridge-work, and also a firm and reliable support for inlays, the building up of broken teeth and the opening of the bite in cases of badly-worn or broken teeth.

The system of work that I shall endeavor to explain to you is not only artistic, but is unequalled in its scope, and almost unlimited in its application, to any tooth in the mouth. Its permanency and durability has now stood the test of ten years.

Undoubtedly to your mind comes the question, is this work going to last? That was the first query to my own mind; therefore the reason for my tardiness in bringing the results to your notice. It has proved far beyond my most sanguine expectations, and has led me to the inquiry, why does it hold

^{*}From Dental Review. Cuts kindly loaned by H. D. Justi & Son.



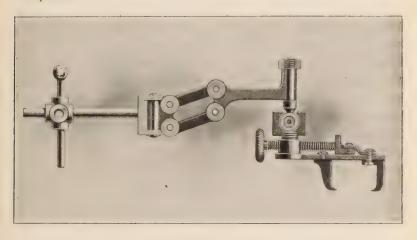
No. 1. Represents the contour inlay filling of proximal surface of central incisor.

- No. 2. Showing bridge attachment for a cuspid tooth.
- No. 3. Illustrates porcelain inlay, showing the attachment prepared with staple of platinum to secure porcelain, also complete ready to be cemented into place.
- No. 4. Illustrates the building of cusps of badly worn teeth or opening the bite.
- No. 5. Represents the building up and restoring of a badly decayed and broken molar.

so well? Several reasons present themselves. One quality is paramount, and that is rigidless, or making these fasteners of sufficient strength to bear the burden for which it was intended, without any spring. The failure of bands and other fastenings for bridge-work is due, in a large degree, to the spring in the metal, when force is applied. Where there is the slightest flexibility the cement loosens up, disintegrates and is washed out by the fluids of the mouth. In a short time we find the attachments loosening, to say nothing of cutting between the teeth, filling the spaces with a band, crowding the gum from its normal position, producing diseases or disturbance upon or about a tooth that has a double duty to perform.

If you set out to loosen the attachment of a bridge the first thing you attempt to do would be to spring the metal of which it is made, and you would soon succeed in loosening it to that degree that it can be easily removed. Therefore, I claim for this attachment *rigidness of structure*, and made to slide perfectly to place upon the tooth, to have *no* spring, and to carry the support of the bridge without yielding to the strain in any

degree. The close application of the metal to the tooth admits of such a small quantity of cement that it forms an almost inseparable union.



MEASURING DEVICE.

The next question that arises, can the edges of this fastener be made tight enough to prevent the washing out of the cement beneath its edges?

Did it ever occur to you, that in fitting a crown or a band, that you have an edge to be fitted to the tooth, oftentimes over a bulge and frequently under the loose margin of the gum, where you cannot see how closely it is adapted, and the cement that you are placing so much reliance upon coming in contact with the secretions before it has hardened? With this attachment the pattern form is of pure gold or platinum, and when burnished to the tooth is so closely adapted that the edges are so tight the cement is not visible.

All this is accomplished *without cutting spaces* between the teeth or in anywise infringing upon the natural condition or defacing of the tooth to which it is applied.

The first and most important step is the preparation of the tooth, and this depends, of course, in a degree, upon the character of the case in hand. When we set out to construct a bridge there is one *all important* factor that is usually overlooked, and that is the relative positions of the teeth or roots

to which the attachments are to be made, and the *most* of us find our bridge, when completed, so far from going to place in the mouth that we begin to distrust our impression, or else we think the bridge must have warped in soldering, but we struggle with it, and after a good deal of springing of the bridge, wrenching of the teeth and cutting away portions, we succeed in getting it to place. What is the natural result of all this upon the bridge? The porcelain facings are fractured and in a short time drop off. We depend too much upon the cement to fill in the space made by the operation, thus greatly lessening the strength and durability of the work.

I have here a little device, the purpose of which is to give you the parallel lines or portions of the tooth structure necessary to be dressed away, the direction of the post in the root and the line of the grooves to be cut in the tooth to receive the fastener. This instrument, though somewhat crude and differing materially from what I hope to produce in the near future, is of great benefit and the saving of a great deal of guesswork. I do not know of anything as yet having been devised for the purpose, and I hope some of you ingenious ones will work out the problem.

After having determined upon the direction of my grooves and the portion of the tooth necessary to be cut away, to allow for the free and easy adjustment of the bridge when completed, we then proceed with the preparation of the tooth for my fastener. This is most conveniently done with the carborundum disk to flatten the sides of the tooth, extending to about its center line, and without cutting a space entirely through or between the teeth, thus allowing sufficient space to receive the thickness of gold necessary for the fastener when completed. I then cut my grooves, using disk or enamel burs, take an impression of the tooth and make a little die as vou see here. On this die I burnish a thin pattern form of pure gold, which is annealed and refitted upon the natural tooth. This pattern form, when burnished to place upon the tooth, usually fits so close that it is difficult to remove the same without bending. I, therefore, fit a wire staple, made of clasp-metal, into the

grooves and upon the pattern form, which aids materially in removing the form and retaining its shape during the process of adding the necessary metal used in stiffening. This process of stiffening is of the utmost importance and should be carried out cautiously, unless you would be disappointed in results, for upon this depends strength and durability so important to-success of the work.

For inlay work and in opening the bite in cases of badly worn teeth this fastener can be applied with most satisfactory results, the attachment serving as a support for the inlay as well as a secure fastening to the tooth.

TWO CASES IN PRACTICE*

BY A. N. D.

The absence of cleanliness and the consequent accumulations on the palatal surface of an upper denture will sometimes cause an otherwise well fitting plate to fail to exclude the air and adhere firmly to the roof of the mouth.

About nine months ago a man for whom my son had made full upper and lower dentures on aluminum about six months previously, came in, saving that his upper plate was so loose that he could not use it, and it did appear to be so loose and rocked so badly that it seemed to have no permanent abiding place. At first we supposed that it would be necessary to take an impression and refit the plate, but on inspection we found the condition of the palatal surface such that it would have beggared the Standard Dictionary to describe it. No mere words in the absence of ocular evidence can convey a correct idea of its appearance. So I will not offend the sensibilities of the reader by trying to describe it, but will beg his pardon for referring to it at all. Suffice it to say that my son took it to the laboratory and gave it such a scrubbing and polishing that it once more had a decent appearance. The patient put it into his mouth and pronounced it all right.

^{*}From Pacific Dental Gazette.

I had another case more recently, in which I had made an upper denture for a lady who, after wearing it about a year, said that her gums had shrunken so much that she could not use it without its dropping. On examination I found the decorations with which the palatal surface was studded were so elaborate that there was no room for them, and the plate could not exclude the air. But when it was properly cleansed and polished it adhered to the mouth as firmly as when it was first made. I gave her a little kindly advice as to how she might avoid a recurrence of the trouble, and shared with her the joy she experienced in finding her difficulty so easily removed, and dismissed her.

SETTING CROWNS AND FILLING ROOT CANALS.* BY H. L. CRUTTENDEN, D. D. S., NORTHFIELD, MINN.

I propose to give a system of setting a crown or bridge that is absolute in its results, that has no guesswork or supposition that the root has been filled with the material intended for that purpose, and that no air is confined in the inner portion of the canal; at the same time one that is easier and simpler to manipulate than the ordinary way.

To do this we will use a cement syringe, which consists of a tube with a piston working easily within it, and a contracted tube or point at one end small enough to enter an enlarged canal that will receive a pin; the cement is introduced into the syringe through a lateral opening near the upper end. Mix the cement to the consistency of thick cream or vaseline; if it is very quick setting, have it thinner. Insert the small end of the instrument to the bottom of the canal; press upon the piston until you can see the cement coming out of the canal. The material is deposited at the bottom first, and the entire canal is filled. Now insert the pin of your crown or bridge into the cement and you have a perfect setting with no air confined at the end of the pin.

^{*}Extract from article in Review.

MAKING THE MATRIX FOR A SEAMLESS CROWN.* BY J. H. PROTHERO, D. D. S., CHICAGO, ILL.

It is presumed that all of you are more or less familiar with the manner of constructing the plaster model of the tooth that is to be reproduced in platinum or gold, so this part of the method will receive no consideration.

The model, having been constructed and carved to proper shape, is now ready to dry out. The metal is placed in the ladle and melted, the plaster crown grasped in a pair of long handled wire pliers that close automatically and pressed into it until entirely immersed. A ladle of small diameter but quite deep is used in order that the metal may entirely cover the crown.

When first introduced, considerable bubbling occurs, owing to the rapid escape of the steam. Vibration is distinctly felt in the plier handles and also in the ladle handle, as long as any moisture remains. As soon as this ceases it is a certain indication that the plaster is dry and free from all moisture or gas that might cause trouble in casting. Three to five minutes' time is usually sufficient to bring about this condition and insure certain results.

It is now removed from the ladle and placed in position on base on which it is to rest while the matrix is being cast. If set on mouldine care should be taken that the cervical end is not pressed into the clay, as this would reduce the depth of the matrix and consequently shorten the crown.

A better method is to shape the mouldine with a curve corresponding to the gingival curve of the band from buccal to lingual and cover it over with a sheet of thin paper. A small hole can be drilled in the cervical end of the plaster crown, into which a peg is fitted, the outer end projecting an eighth of an inch or so. The crown is now pressed down on the mouldine, the peg passing through the paper and into the clay, and acting as an anchorage to hold the crown firmly to its base. If the model is not held down firmly, the metal, owing to its greater

^{*}Extract from article in Dental Review

specific gravity, will displace it and it will float to the surface. The object in using the paper over the surface of the mouldine is to prevent the metal from coming in contact with it, as the glycerine, with which the clay is mixed, has more or less affinity for moisture and readily takes it up from the air, and if any is present on the surface against which the metal is poured the result will probably be a faulty matrix. By covering the mouldine and attaching the crown in the manner just described, error from this source is obviated.

The metal ring is now set over the pattern crown, and the strips of pasteboard inserted in the ring slots, the metal allowed to cool somewhat, or until it begins to thicken slightly, and is then poured upon the occlusal surface of the crown and allowed to trickle slowly over the sides until the matrix is of sufficient thickness. The metal should be poured as cool as possible and yet be sufficiently plastic to copy accurately the surface over which it is cast. When set, it is knocked out of the ring, cooled, and split apart and the pattern removed. As before stated, a perfect matrix can be secured in almost every instance, if the details have been carefully attended to.

By a slight modification, this method is applicable to the construction of counterdies for ordinary swaged cusp work.

The gold band, upon which has been carved the plaster cusps, is covered with a coating of whiting and alcohol, to protect it from contamination by the baser metal. It is immersed in the manner before described, and held under the surface until all moisture is driven off, then set into the clay about to the line of junction of the band with cusp, the ring placed in position, and the matrix poured.

A word of caution is necessary at this point. If any of the whiting, covering the band, should become displaced, the baser metal immediately unites with the gold to such an extent that a new band will frequently be required. The whiting is very easily disturbed, the slightest touch being all that is required to dislodge it, so that too much care cannot be exercised to avoid displacing it in handling the crown in the molten metal.

I have been experimenting with a varnish that would be

easy to apply and more difficult to remove than the whiting, but up to the present time have nothing of special value to offer. An idea occurred to me the other day that may overcome the difficulty. This is to cover the entire band, after the cusp is carved with plaster so as to protect it perfectly from the metal.

This covering need not be more than two millimeters thick, and it will in no way interfere with the escape of the moisture contained inside the band. It may, perhaps, require a trifle longer time to prepare the model for casting, since it is somewhat more bulky, but that is the only objection to its use.

When dry, the plaster covering can be removed, the case imbedded in mouldine in the usual way and the matrix cast.

Most excellent counterdies of uniform density throughout, in which the finest lines and the sharpest cusps can be copied, may be produced after this method, if good judgment and care be exercised in the various steps.

BANDED LOGAN CROWNS.*

BY EDWARD C. ABBOTT, D. D. S., L. D. S., TORONTO.

In considering this subject, I wish to recall to you methods of adjustment which materially enhance the possibilities for attaining a higher degree of usefulness, and by which we are enabled to combine those æsthetic and hygienic requirements which add much to the success, comfort and permanence of the Logan crown.

A careful consideration of the case is, of course, essential before we decide that a Logan crown will meet all the requirements, as the successful application of this and of all porcelain crowns is necessarily restricted by conditions of occlusion, etc., but when judiciously applied and skillfully executed, the banded Logan may be accepted as being among the ideals of modern dental prosthesis.

It probably might be well to consider, in the first place a

^{*}From Dominion Dental Journal.

few of the steps in construction of one of the more familiar methods, viz., the soldering of a gold hood (by which I mean the cap and band) to the post of the Logan. Having prepared the root and constructed the cap and band as for the ordinary Richmond crown, we proceed to adapt the labial face (only) of the abutting surface of the Logan to the end of the root, which, of course, has been trimmed a little below the gingival line. The crown is then cut away slightly at the gingival so as to leave a V-shaped space between it and the end of the root. Now take a thin piece of pure gold and punch a hole in the center to receive the post, slip it over the post and burnish it to the base of the crown, leaving a portion overlapping the margins. Having cut a hole in the cap in the post, place the hood on the root and force the Logan to position. A little wax placed around the post at the base of the tooth, will, when the crown is forced to place, hold the hood and crown in correct relation. Then remove the crown and hood together, the wax retaining their correct relation, and invest. Boil out the wax and solder. This method of construction is analogous, in many ways, with another I more frequently use and which we must concede has many apparent advantages. I refer to the use of porcelain body to take the place of the gold solder, and in which case must obviously use platinum in the construction of the hood. The procedure with regard to making the platinum hood is the same as in the former method and the labial aspect of the abutting surface of the Logan may be ground to fit the root under the free margin of the gum, although accuracy in adaptation does not require so much attention. The lingual surface may also be cut away slightly.

The correct relation and alignment having been secured, the crown is removed and the platinum hood placed on the end of the root, a small hole having been punched for the reception of the post crown. The crown is now placed in position, the post enlarging the hole in the cap as it is forced home. A little temporary stopping is heated and placed in the space between the cap and the crown on the lingual side so as to

retain these in position. The crown and hood are now removed together, still held in correct relation to one another, the temporary stopping taken away and with pure gold or platinum solder the post is soldered to the cap. Before soldering I generally wrap the porcelain part of the crown in asbestos fibre, thus overcoming the danger of checking in heating up or cooling off too rapidly.

Before putting on the porcelain body it is well to replace the crown on in position again and make any necessary changes, as the crown at this stage may be quite readily sprung to its proper relation. Having done this, we may remove the crown, which is now ready for the body. Before using the body I find it an advantage to pulverize it thoroughly in a mortar, the ordinary body as supplied by the manufacturers being a little coarse for crown work. Having thoroughly cleansed the parts, the space between crown and hood may now be filled with porcelain body tapped well to place, which is afterwards baked in the usual way.

TYPAL CONTACT OF THE NATURAL TEETH.*

BY L. P. LEONARD, D. D. S., WASECA, MINN.

Is the contact point between the superior and inferior grinding teeth alike? Is the contact point in the center linguo-buccally? Are the lingual and buccal embrasures the same size? Proximal contact of teeth is similar to contact of two marbles (Black). Marbles differ in diameter, consequently differ in the area of their circumference and in contact; so do teeth. When two marbles are brought in contact, vision is obscured from a greater surface than that which is in actual juxtaposition; the former we shall term the apparent, and the latter the real point of contact, both of which differ to extent according to the size of the marbles. Looking at teeth from an occlusal view they appear oval, but not spherical.

Rules. Rule 1. The area of the circle described by the

Extract from article in Dental Derest.

point of contact between superior molars is one-half the size of that which is between inferior molars.

- Rule 2. The area of the circle described by the point of contact between inferior molars is twice the size of that described between superior molars.
- Rule 3. Between superior bicuspids and between superior molars the lingual embrasures are twice the size of the buccal ones.
- Rule 4. Between inferior bicuspids and between inferior molars the embrasures are equal.
- Rule 5. The point of contact between superior bicuspids and between superior molars is at lingual two-thirds, or buccal one-third, linguo-buccally.
- Rule 6. The point of contact between inferior bicuspids and inferior molars is at the center linguo-buccally.
- Rule 7. Viewing the teeth in contact with each other from an occlusal aspect, the excluded vision should not exceed—between superior bicuspids 8/10 mill; between superior molars 1 mill; between inferior bicuspids 8/10 mill; between inferior molars 1½ mill.

It is the excluded vision or apparent contact and not the real one that the dentist while operating has to measure with his eye, hence the advantage of being familiar with the above rules that we may have measured in our mind the contour and contact point before the filling is inserted.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

How TO MINIMIZE THE PAIN DURING ENTRACTION.— Much of the shock incident to an extraction is avoided, if the instruments used are previously warmed.

To Remove the Odor of Iodoform.—Wash the hands in soap and water; rinse with dilute aqua ammonia, after which

use lemon-juice or cider vinegar. This will completely destroy the offensive odor.—Eclectic Medical Journal.

Wash Alloys Before Using.—I think it wise where we use copper amalgam, or any amalgam, to wash it with alcohol before placing it in the cavity. By so doing we remove the oxids present and get a more intimate contact of the filling with the tooth structure, and greater solidity of the filling itself.—H. C. Register, Cosmos.

A FLUID FLUX THAT DOES NOT PIT.—This consists of a saturated solution of equal parts of boracic acid and borax and is prepared in the following manner:

Mix equal parts of boracic acid and powdered borax and place them in sufficient water to get a saturated solution. This may be determined by a slight residue on the bottom of the receptacle.—Dr. Dodel.

Chamois Leather in Taking Impressions for Inlays.—The method of using it is to fill the impression in the ordinary way with modelling compound, then remove the compound and fill up with small pieces of chamois leather, using pressure in the same way as with the compound. It seems to produce a sharper outline, and permits of the foil being carried over the edges with less danger of tearing.—T. Madin, in British Journal.

How to Stop the Haemorrhage Following the Extraction of a Tooth.—Thoroughly cleanse the socket. Then place in it a small tampoon saturated with a 25% solution of pyrozon. This will stop the most obstinate haemorrhage. Owing to the escharotic nature of this preparation great care should be exercised in its use, confining the application to the parts under treatment. A 3% solution of pyrozon controls an ordinary haemorrhage.—X. Dodel.

How to Extract Decideous Teeth.—Decideous teeth are—on account of their close proximation to the permanent teeth and as children dread the forceps—best extracted by a push. To do so place an elevator on the labial or buccal surface of the tooth near its neck and force lingually. Use a slow,

steady force—best the muscles of the shoulder—as this precludes the possibility of slipping.

Only on the superior incisors the elevator or a hook should be put on the palatal side of the tooth and forced labially and buccally.— $X.\ Dodel$.

Eyes Affected by Diseased Teeth.—Dental affections may cause varied symptoms in the eyes. Whenever painful or inflammatory conditions of the eye from unknown causes occur, and persist in spite of treatment; when there is suppression or diminution of visual acuity which cannot be explained by opthalmoscopic examination, by changes in the intra-ocular tension, or by cerebral complications,—in all these cases the teeth should be carefully examined, and, if any lesion be found, appropriate dental treatment should be at once instituted.— *E. II. Stevens, in Cosmos.*

A METHOD OF STOPPING NEURALGIC TOOTHACHE.—During the last 15 years I found the following prescription giving the best results in stopping neuralgic toothache.

Dose—One powder every half hour, till pain stops: From three to six of these powders generally relieve the most excruciating neuralgic toothache.—X. Dodel.

To Prevent Warping of Plaster Models.—The warping and contracting of plaster models is, no doubt, an occasional source of error, and it may be guarded against by attention to the size and shape of our model and also to the process of drying the model. (Tendency of shallow flat model is greater than a deep, thick one, to warp). I prefer to dry a model in a hotair oven, well ventilated, to allow of the escape of steam, the model being propped up in such a manner that moisture may escape equally from all surfaces and no one part be dried more rapidly than another.—F. Barrett, Journal B. D. A.

PROTARGOL FOR ABSCESSED TEETH.—Dr. Nicholson, in Cosmos, states that he has had very satisfactory results from

the use of protargol in the treatment of cases of alveolar abscesses in incipient, acute, and chronic stages; some blind and others having fistulas, as well as putrescent pulps and roots. He uses a solution of from 7 per cent to 10 per cent, the original solution being 40 per cent. From two to five applications to pulp canals have been sufficient to thoroughly disinfect. He has not noticed in using protargol in solutions as strong as ten per cent, that the teeth were discolored, and he has left extracted teeth in the solution several days without any discoloration. As far as his experience goes he thinks that he has accomplished better and quicker results with protargol than with any other thing he has ever used.

To Overcome Staining of Inlays From the Use of COPPER DISKS.—I have not been so successful with the copper disk, and I used it in the beginning quite faithfully, both wet and dry. Most of the inlays we set are very porous compared with the old-fashioned teeth, such as Dr. Kingsley used to bake. I had occasion, some years ago, to put in a set of continuousgum teeth made by Dr. Close. The patient complained of an odor, and I insisted, in my young way, that it could not be possible, and it was not right for her to make such a complaint; but I know now that she was right and that the porcelain was not well baked. There was a gloss over it, but it was porous, and could absorb and be disagreeable. Many of our inlays are porous, and if the color from the copper wheels gets into them, it is very difficult to get it out. I have had little disks made with the white rubber, so that does not happen now. They are as thin and will cut as narrow a groove as any copper disk I remember to have used.—Dr. Perry, in Cosmos.

DISINFECTION OF THE HANDS.—All authorities agree that the most important agency is soap and water, and a nail-brush, thorough washing with laundry soap, or green soap, and a nail-brush that has been previously sterilized, for ten minutes, changing the water three times, is Dr. Kelly's rule, paying especial attention to the nails. After this there are two methods, a long method and a short one; the former to be used

when the hands have been especially contaminated, or when the operation requires the opening of a serous membrane, as the peritoneum, a joint, or the brain. It consists of staining with a saturated solution of potassium permanganate, then bleaching with a saturated solution of oxalic acid, then immersing in a solution of corrosive sublimate, I:2000, then rinsing with sterile water. The short method follows the thorough scrubbing with an immersion in bichlorid solution, afterward rinsing in sterile water.

Obviously heat, the greatest germicide, cannot be used to the hands directly, but the best operators are now using for their most important operations long rubber gloves sterilized by boiling, and thus work with a boiled hand.

For your work it is obvious that the shorter method of sterilization mentioned above is all that is required, unless it be in the case of a very contagious disease, as syphilis or tuberculosis, when the dentist would be justified for his own protection in using the rubber glove.—*G. IV. Guthrie, M. D., in Cosmos.*

How to Make Gold Cohere Under All Conditions.— Where it is advisable to repair an old gold-filling without removing the gold in position, it may be accomplished by following the simple directions herein outlined:

- 1. Apply the rubber dam.
- 2. Clean the tooth carefully with luke-warm water.
- 3. Wash it with sulphuric ether, to dissolve any fatty or oily substance.
 - 4. Go over the filling with alcohol.
 - 5. Dry it with warm air.
- 6. Take a gold cylinder and unroll it until you have but one thickness, or take gold foil No. 4.
 - 7. Carefully anneal this, as it readily melts.
- 8. With a very fine pointed plugger go over the entire surface of the gold put on, first with hand pressure, then mallet it well.
 - 9. After that go over it with a convex plugger.
- 10. The direction of the force should be applied at a direct right angle to the surface worked upon.

- 11. If you have followed these directions, applying two layers, you can go ahead in the usual manner and use either pellets or leaf gold.
- 12. Having tested it in various positions I found it entirely satisfactory except where the filling is subject to great stress, when it is ill advised.

This method is of special value, if slight imperfections are observed after finishing or if the gold during the filling gets wet, bloody or "cranky," in which cases an application of alcohol and warm air is sufficient to make the gold cohere by this method.—Dr. X. Dodel.

CORRESPONDENCE.

EDITOR OHIO DENTAL JOURNAL:—In a recent conversation with Parke, Davis & Co.'s representative, he assured me that my unfortunate experience with Chloretone—which was published in The Journal for December, 1900—was due to the alcohol which I used with the saturated aqua solution. If this was the case, I wish to give the drug credit. What we all want is the true merit of the drug.

Yours respectfully,

C. S. Kelsey.

Elyria, O., March 6th, 1901.

AMERICAN DENTAL DEGREES IN GERMANY.—FRAUDULENT DENTAL DIPLOMAS, ETC.

DEPARTMENT OF STATE.

Washington, February 6, 1901.

W. C. BARRETT, Esquire,

Chairman Committee on Foreign Relations of the National Association of Dental Faculties, 208 Franklin Street, Buffalo, New York.

Sir:—At the suggestion of the Consul at Munich, I enclose for your information, copy of a despatch from the Consul in regard to American

dental degrees in Germany, and the efforts which are being made to prevent those who hold fraudulent diplomas from practicing dentistry.

I am, sir, your obedient servant,

(Signed) THOS. W. CRILLER.
Third Assistant Secretary.

CONSULATE OF THE UNITED STATES OF AMERICA.

Munich, Germany, December 29th, 1900.

HONORABLE DAVID J. HILL,

Etc., Etc., Etc.

Sir:—Referring most respectfully to my unnumbered despatch of April 21st, 1900, upon the subject of American Dental Degrees in Germany, to which I was honored with a reply by your department under date of July 17, 1900, No. 36. I have the honor most respectfully to report at this time:

- That I have since placed myself in relation with the organized associations of American dental graduates in southern Germany, and in connection with the learned counsel of this Consulate, have advised them how to conduct themselves in their relations with the Government and press, and in the defence of those of their members who have been or are being prosecuted for what is termed here an "unlawful" use of their honestly acquired titles of D. D. S.
- 2. That at the same time in all cases whether of gentlemen holding legitimate diplomas or of persons holding illegal issues. I have been in constant communication with the Bayarian Department of Justice and the Foreign Office to protect the rights of all legitimate holders of such American degrees, correctly issued, to use and advertise their degrees, and to secure the prosecution and conviction of those illegally holding American certificates or honors.

My task has been a peculiarly difficult and delicate one, as there is in the first place, even among educated and intelligent Germans, a misconception of the character of American universities and especially the schools of dentistry, on account of many of them being, as far as their original organization is concerned, in form at least, private concerns; and among the less informed a strong prejudice against American degrees on this account. It has, therefore, been a matter of propaganda to bring the authorities to understand that under the republican forms of government existing in the several states, where so much is necessarily left to private initiative, these institutions, although in form private enterprises, by virtue of their charters and the right of visitation and control by the state authorities, are in fact public institutions.

Another difficulty lies in the fact that the German universities, stimulated by the reputation and success of American dental colleges, have added dental departments to their curricula, which, in theory at least, are not inferior to the average American institutions; and among others the University of Munich has recently established such a department which in

equipment and the character of its instruction will prove inferior to no other.

The purpose of this instruction in dentistry at the German universities is to offer to Germans the opportunities of educating themselves thoroughly in that art and to raise the estimation of German dental degrees to the American standard, so as to induce students to remain at home.

It is easy to comprehend how this jealousy of American degrees finds its expression not only among prejudiced people, but also among holders of German dental degrees in denunciation of American degrees and dental institutions, and also in efforts to bring about a prohibition of their use in Germany.

I have good reason to believe that I have met these difficulties successfully and have been able to convince the authorities here of the value of legitimate American university honors and the titles of technical schools, and of the expediency of not prohibiting them, also of the sincere desire of the United States government to do everything possible to prevent the issue of worthless diplomas, and to effect the closing of institutions issuing them.

My main endeavor has been to secure such evidence as might be of service in proceedings against the institutions issuing illegitimate diplomas and I have already obtained possession of original diplomas and certificates in two instances where they were purchased in America by Germans against whom proceedings are now pending.

In one of these cases I have had the diplomas copied by photography and typewritten copies of the certificates made, specimens of which are hereto annexed marked Exhibits A. B. C. D. E. F. I have applied to the legal authorities to have the original diplomas and certificates in these cases delivered to me for transmission to the State Department, for use as evidence in any proceedings it may be deemed expedient to institute, and though such a course is difficult to effect, I hope for a favorable answer.

Owing to the urgency of the case I have also transmitted copies of these diplomas and certificates to His Excellency the Governor of Illinois, and a copy of my letter to him is hereto annexed, marked Exhibit G.

On December 10th, 1900, a very interesting case was settled in the courts of Munich against one Samuel Gumpoldt, once a "Zahntechniker," now a full fledged "American Dentist," claiming also to be the holder of the degree of Doctor of Dental Surgery. He obtained the "Doctorate" at one of these non-reputable dental schools, of which two remain to be suppressed in Chicago. "Dr." Gumpoldt went to America some time last spring, remained a few weeks in Chicago and came back with a certificate from the "State Board of Dental Examiners," permitting him to practice dentistry in Illinois. The State's Attorney here made the polite request that I should testify as an expert in the case in order to establish the illegality of the defendant's claim, and as a result the "Dr." was condemned for terming himself "Amerikanischer Zahnarzt," and heavily fined. The case of course will be appealed, but it is to be hoped that the Governor of Illinois will cause an enquiry into the illegal practice prevailing in that state by issuing such certificates as in this instance, as the State Board is only expected to admit to examination a candidate who has spent at least six months in a regular dental school. In this instance the "Dr." made certain claims as to studies

in Roumania, but I fear the State Board of Illinois has no "evidence" to substantiate these claims.

Another case now in the courts is affording me the opportunity to secure by the aid of photography the needful evidence to convict of such illegal practice the other now remaining non-reputable institution in Illinois, making a business of the sale of diplomas, and I shall have the honor to submit this report by an early post.

The rapidly growing tendency among the peoples of the German Empire to bar out as far as possible all foreign competition may, as I have already suggested, force the governments of the various states to a more determined warfare in behalf of the dentists educated in the schools of Germany only, against those bearing the distinctive honors of the American dental schools, thus ultimately affecting not only the good standing of American dentists abroad, but also destroying their usefulness, if not barring them out altogether. It is to be hoped, therefore, that the course taken by this Consulate, however great the sacrifice in labor and time, may prove both timely and judicious, maintain the integrity of our worthy schools of dentistry and preserve them in honor abroad as well as at home.

To this end I would most respectfully ask you whether you do not deem it expedient that publicity be given through the press of America such institutions and in Germany to punish persons holding and advertising their diplomas in order to deter foreigners from purchasin such titles and thereby to destroy the market for them. I have abstained entirely from any communications whatever to the press, but believe that the widest publicity should be given the whole subject.

I have the honor, etc.,

(Signed) JAMES H. WORMAN, United States Consul.

Enclosures—Photograph of diploma granted "Johannes Fuchs," conferring the degree of Doctor of Dental Surgery, granted by the "Cosmopolitan Post-Graduate College," of Chicago. Dated Oct. 25, 1899. Signed, C. A. Weil, Dr. Med. Chancellor; Emanuel Kargen, D. D. S., Dean; C. A. Williams, Rector..

Photograph of diploma granted Dr. Johannes Fuchs by the Haskell Post-Graduate School of Prosthetic Dentistry. Dated Oct. 16, 1889. Signed, L. P. Haskell, Pres.; C. A. Grant, Secretary.

Buffalo, N. Y., Feb. 9th, 1901.

DEPARTMENT OF STATE,

THOS. W. CRILLER, Ass't Sec.,

Sir:—I am in receipt of a communication from you enclosing one from the U. S. Consul at Munich concerning the American dental diploma and other matters. I can assure you, sir, that I deem it of the very highest importance to the dental profession of America, and I believe that the Consul is doing a work that will advance the interests of many American citizens. Unless I am advised that the communications are in any way confidential, I shall forwar! them for publication in some of our most im-

portant professional journals. I beg that any future advices that the State Department may receive of the same nature may be forwarded to me for communication to the dental profession of America. I am,

Very truly yours,

(Signed) W. C. BARRETT, Chairman Foreign Relations Committee National Ass'n Am. Dental Colleges.

DEPARTMENT OF STATE.

Washington, February 13, 1901.

W. C. BARRETT, Esquire,

Chairman Foreign Relations Committee,

National Association of Dental Faculties,

Buffalo, New York.

Sir:—I have to acknowledge the receipt of your letter of the 9th instant suggesting that the despatch from the Consul at Munich in regard to bogus dental institutions, be published.

In reply I have to say that the Department sees no objection to your publishing it. I am, sir,

Your obedient servant,

(Signed) DAVID J. HILL, Acting Secretary.

Buffalo, N. Y., Feb. 9, 1901.

HON. JAMES H. WORMAN,

U. S. Consul at Munich.

Sir:—I am in receipt of a communication from the Department of State of the United States Government, enclosing a report, or copy of a despatch, concerning American dental degrees in Germany. I enclose copy of my answer to the Third Assistant Secretary in reference thereto. I beg personally to assure you that the great number of dentists in the United States, and the graduates of American colleges abroad will fully appreciate the importance or the work you have undertaken, and will extend to you their enthusiastic support.

By this mail I will forward to you copies of the reports of this committee, which will give you some idea of what we are attempting to do. Let me say that we believe we now have in prison several of those who have been engaged in issuing fraudulent diplomas, and hope the traffic is now upon the point of being broken up in America.

I beg on the part of my colleagues to tender any service on our part in your good work, and I request that I may be favored with any reports or other documents which may assist in the work in which we are engaged.

Very truly yours,

(Signed) W. C. BARRETT, Chairman Foreign Relations Committee National Ass'n Am. Dental Colleges.

Washington, March 18, 1901.

Editor Ohio Dental Journal: By permission of the Surgeon General, I have the honor to inform you that the following named gentlemen have successfully passed the examinations before this Board, and have received their appointments as Contract Dental Surgeons, U. S. Army:

Siebert Davis Boak, graduate of National University, Dental Department, Washington, D. C., from Martinsburg, W. Va.

Edward Clarence Lauderdale, graduate of University of Buffalo, Dental Department, Buffalo, N. Y., from Naples, N. Y.

These gentlemen have been ordered to report for duty at San Francisco, Cal., April 15th, for service in the Philippines.

At the present writing there have been fourteen gentlemen ordered before this Board by the Surgeon General for examination. Only two, is you see by the above report, have successfully passed the examination. The Board has been disappointed in the professional qualifications of most of the young men who have presented themselves. The examination does not cover any subjects which have not been taught in our best dental schools, and the Board believes that the questions submitted in the examinations have been of a practical nature, and eminently fair. It is to be hoped, therefore, that our dental schools will not recommend any young men to come before this Board who are not thoroughly well qualified, theoretically and practically, in all of the branches comprising the curriculum of our best dental schools.

It will be the pleasure of the Examining Board of Dental Surgeons to keep the profession posted as to its work through the various dental journals.

I herewith enclose list of the subjects upon which all candidates will be required to take examinations, and the percentage they must attain in order to pass. This notice the Board would be pleased to have you publish.

Kindly acknowledge receipt.

Very respectfully.

JOHN S. MARSHALL.

President Examining Board of Dental Surgeons, U. S. Army

NOTICE.

Candidates for appointment as Dental Surgeons in U. S. Army will be examined in the following named branches:

Anatomy, Physiology, Histology, Physics, Metallurgy, Chemistry, Dental Anatomy and Physiology, Dental Materia Medica and Therapeutics, Dental Pathology and Bacteriology, Orthodontia, Oral Surgery, Operative Dentistry, Theroetical; Prosthetic Dentistry, Theoretical; Operative Dentistry, Practical; Prosthetic Dentistry, Practical.

An average of 75 per cent will be required in each subject for Theoretical Examination, and 85 per cent in the Practical Examinations.

SOCIETY.

MICHIGAN BOARD OF DENTAL EXAMINERS.

The State Board of Examiners in Dentistry for Michigan, will meet at Battle Creek, Mich., commencing Monday, May 13th, at 2 o'clock p. m. Applicants for examination must furnish materials, instruments (including dental engine) and gold for putting in one or more gold fillings, as the Board may require.

FRANK O. GILBERT, Secretary.

RESOLUTION ADOPTED BY THE TOLEDO DENTAL SOCIETY.

Whereas, Death having entered the home of our members, Dr. W. H. Tenney has suffered a deep bereavement in the loss of his beloved wife; therefore, be it

Resolved, That we, the members of the Toledo Dental Society, extend to our brother our sincere and heartfelt sympathy in his affliction.

Resolved, That this resolution be spread upon the records of the society.

(Signed) A. J. Wolfert, D. D. S., L. L. Barber, D. D. S., A. D. Williams, D. D. S.,

Committee.

O, MI! DENTAL MEETING.

The third triennial meeting of the State Associations of Ohio. Michigan, and Indiana, known as the original Tri State Dental meeting, will be held at the German House, corner of Michigan and New Jersey streets, Indianapolis, Ind., June 4, 5 and 6, 1901, beginning at 10 a.m., Tuesday June 4. All practitioners who conduct their practices in a manner to command the respect of their fellow practitioners are invited to attend and participate in the proceedings, whether they are members of a State Association or not. These meetings are the largest and most interesting held in the United States. Fully eight hundred dentists will be present. The program includes some sixty clinics of great interest and importance. Railroad rates of a fare and a third for the round trip have been granted by the Central Traffic Association throughout the whole territory. For further information see the May Journals or address,

GEORGE E. HUNT, 131 E. Ohio St., Indianapolis, Ind.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners, to examine applicants for a license to practice dentistry in this State, will be held in Chicago College of Dental Surgery, corner of Wood and Harrison streets. Candidates must come provided with the necessary instruments, rubber dam, and gold, to perform practical operations and such other work as is deemed advisable by the Board.

Those desiring to take the examination should matriculate with the Secretary ten days before the date of meeting.

The examination fee is \$10.00.

J. G. Reid, D. D. S., Secretary, 1006 Champlain Building, 126 State St., Chicago, Ill.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

Ozone, To Make.—Kali permanganate, two parts; sulphuric acid, one part, mixed slowly, will develop ozone in large quantities, and purify the atmosphere.—Med. Visitor.

Speak Not Evilly Against Thy Brother.—In all our dealings with our patients we should be careful not to injure by word or deed the reputation of our ethical brothers, but by our attitude towards them teach the public that we respect each other.—W. J. Taylor.

THE OLDEST PEOPLE IN THE WORLD.—According to the report of a committee of the Hundred Year Club, the oldest man now living is Izai Rodeisky, of Moscow, Russia, who is in his hundred and thirty-sixth year, and Mrs. Nancy Hollifield, of Battle Creek, Mich., who is 117.

SARCASTIC.—"In gold filling always use a large foot plugger to contour with, it pats the gold down so nicely; should you have the misfortune to see the corner tumble off during the operation, use the same plugger to repair the damage; with a sharp pointed one you might push a hole through your filling."

To Remove Blood Spots.—Peroxide of hydrogen used at full strength on blood spots on shirt fronts or collars and cuffs, will effectually remove them without soiling the place. It will also disorganize the fibrin, and remove the blood stains from woolen goods when applied at full strength and subjected to the scrubbing of the goods with the ordinary flesh brush.

MOUTH BREATHING.—For mouth-breathing during the night, Dr. N. B. Jenkins recommends the use of a bridle, as a reminder to the patient, rather than as a means of locking the jaws. He points out, however, that in many mouth-breathers the muscles which hold the jaws closed may become atonic and may need the assistance of the bridle in overcoming the habit.

POINTERS.—We have just come out of an experience with sodium salicylate in toothache—it cures. It also relieved an asthmatic attack, which exceedingly pleased us; fifteen grains every four hours.

Podopyllin, one-twelfth grain, used until the bowels are well moved, will aid materially in aborting an acute cold in the head.—Dr. Price in Med. Summary.

TEETHING AT EIGHTY-FIVE.—Cases of teething in old age, though by no means unknown, are not altogether common. A Trenton, N. J., woman, eighty-five years of age, having suffered for some months from pains in the jaws, has now grown two fine new teeth. But few of her second set are missing, and those that are present are said to be sound.—N. Y. Medical Journal.

REFERENCE to the question asked in the Lancet relative to a crop of hair growing on the face of a patient suffering from a chronic abscess, it would be well for the anxious inquirer to ask a bucolic individual what is the cause of fairy rings seen in the meadows; or of the surgeon, why pigment and hair are found near a cricoid aneurysm, and the probable reply would be—more pabulum—in each case.

Sublingual Diphtheria,—The manifestation of diphtheria on other mucous surfaces than that of the throat is not very uncommon, but it must be quite rare for it to be found in the mouth without implication of the throat. Such a case is reported by Fentem in the Edinburgh Medical Journal. The diphtheritic patch was situated beneath the tongue, and the diagnosis was confirmed bacteriologically. The fauces and the soft palate were reddened, but quite free from false membrane.

Two Better Than One.—As regards the question as to whether the same person should administer the anæsthetic and also operate, it is my opinion that, where possible, he should not. The objections to such a proceeding are many, both on operative and social grounds. The work of administering the anæsthetic and of operating are both sufficiently important to justify the employment of a separate person for each task. Besides, the presence of a third person, especially in the case of a female patient, is always advisable.—Dental Record.

THE SMALLEST WISDOM TOOTH.—The last thing I have to bring forward I have had the temerity to call the smallest wisdom tooth on record, though if any member can show me a smaller one I shall be happy to withdraw the claim; it measures exactly ½ of an inch from tip to apex.

I may be asked why I call it a wisdom tooth at all; my answer is, that it occupied the position of a wisdom tooth, that the other three wisdom teeth were all present, and fairly normal, though small specimens of their kind; that there was no trace of any other wisdom tooth behind or near this, though there was plenty of room, and that the patient from whose mouth I removed it was well over 30 years of age, and one was therefore justified in concluding that if there had been another tooth in that neighborhood it would have been erupted.—C. F. Rilot, in Brit. Dent. Asso.

A Warning to Young Men About to Marry.—A young sturdy collier's experience should be a warning to the world at large. He was about to wed, and having such a trifling thing as an open pulpless molar, he ignored that fact, and postponed having the necessary attention paid to it until after the nuptials were over. This function took place on a Monday, he was compelled to retire to his bed on the following Wednesday, when a local general practitioner was called in; the latter ordered his removal to the hospital on the Friday, trismus having set in, and there was marked dysphace produced by adema of the glottis, so that it was necessary to perform tracheotomy soon after his admission. He died on Saturday morning. To sum up: Open pulpless molar -pyogenic bacteria—toxines. Toxines—cell changes+nervous exhaustion - insufficient w. B. C.—services of an undertaker and accompanying myrmidons.—Jour. B. D. A.

OHIO DENTAL JOURNAL.

VOL. XXI.

MAY, 1901.

No. 5.

CONTRIBUTIONS.

THE INTERPROXIMAL SPACE.*

BY G. N. WASSER, D. D. S., CLEVELAND, O.

It is conceded that the 19th century has seen more important scientific discoveries than all the centuries before it.

The profession of dentistry has, with the other sciences and arts, shared freely in this marvelous progress and growth.

While this has been going on in every department of dentistry it is my purpose to speak of it only in relation to one phase of Operative Dentistry.

The early part of the century saw the birth of many "false prophets" and "would-be" benefactors. It was the custom of these misguided but well meaning advocates to indiscriminately cut and file the approximal surfaces of all the teeth to prevent interproximal decay, on the theory of "no contact, no decay."

Many conscientious dentists practiced this method but on account of its failure to accomplish all that its advocates claimed, it was gradually abandoned until in 1870, when it was

^{*}Read before Cleveland City Dental Society.

revived in a modified form, through the writings and teachings of Dr. Robert Arthur, at one time professor of the Principles of Dental Surgery in the Philadelphia and Pennsylvania Dental Colleges. His theory was that if the point of contact was changed from one near the occlusal surface to one near the cervical margin "self-cleaning" spaces and consequently immunity from decay would result. It is said the immunity from interproximal decay was usually secured. But at what a price!

The important function of mastication was all but destroyed. Serious injury to the gum and peri-dental membrane and no little disfigurement resulted from these operations.

Notwithstanding a considerable number of well meaning practitioners adopted Dr. Arthur's method. In a short time, however, it was fully realized that the expected results did not follow and the practice of cutting and filing was again abandoned.

At that time it was not known that the points of contact between the teeth were free from decay. Investigation showed that approximal decay always begins a little above the contact point, that is, nearer the gum.

When we undertake to operate on the teeth by filling we should have three objects in mind: 1st. The prevention, as far as lays within our power, of a recurrence of caries. 2nd. The restoration of the lost part to a healthy condition, and, 3rd, to a natural form.

It was not known by Dr. Arthur and those before him that practiced approximal cutting and filing for the prevention of approximal caries, that the original and recurring caries depended on certain facts and principles of physics.

When a tube is inserted in a liquid capable of wetting its surface, the liquid will rise to a higher level within the tube than the surface level of the surrounding liquid."

This phenomenon is known as capillary attraction. The same thing would take place if instead of a tube two rounded or flat plates are immersed in the liquid. The smaller the tube or the nearer the two plates are together, the higher will the liquid rise between them.

This is what occurs upon approximal surfaces of teeth that are made parallel either by cutting or filling. The saliva rises to a higher level between them and being retained in this narrow space with little motion soon becomes of an acid reaction and the destruction of the tooth tissue begins. The interdental space being triangular, with its base at the gum, the saliva rises but a short distance on account of the separation and the consequent lessening of the capillary attraction.

So it is self evident that the nearer we approach the normal form of the teeth the better the results.

Previous separation is imperative to the best results. This is especially true if the fillings be of gold or of tin and gold.

With rare exceptions it is usually important to gain space where amalgam is used.

It is the writer's opinion that in moderate or large approximal cavities, cotton saturated in sandarac varnish firmly packed into place and left from three to five days is not only the most humane but the most satisfactory way of gaining space.

Humane, because it is not painful unless the pulp is exposed, in which case other procedures would first be necessary. Satisfactory, because ample space can thus be gained to properly perform the operation of filling and restoration of contour without the annoyance and hindrance usually attendant upon the use of mechanical separators and other means of immediate perparation.

Dr. Bonwill's method of packing the cavities with red baseplate gutta percha and allowing the continual force of mastication to drive the material towards the gum, thus producing expansion, is an excellent means where considerable space is desired.

In small cavities, especially in the anterior teeth, I prefer rubber left between the teeth from 18 to 24 hours; then removed and the space held by gutta percha or cement until the soreness subsides.

There is a device called "The Little Giant Separator," but I imagine that it is not only painful as it impinges on the gum, but only applicable in a comparatively few cases. The same thing can be said of the wooden wedge.

After space is gained, the preparation of the cavity is greatly facilitated, especially the marginal walls.

With burs and chisels it is now possible, with less danger of injuring contiguous teeth, to so extend the cavity as to bring the lateral margins of the filling so far out upon their respective surfaces as to make them subject to the cleansing influences of the lips and tongue, to say nothing of the brush.

In this making and placing of artificial crowns, pains should be taken to preserve the interdental space, lest the patient be annoyed by the consequent crowding of food upon the sensitive gum.

Suitable matrices greatly facilitate the introduction of approximal fillings in molars and bi-cuspids and materially assist the careful operator to properly perform the operation of filling and restoration of contour to the original form and outline of the teeth.

Contour may be exaggerated to save a space where the teeth originally were not quite in contact, but it should never be less than normal to secure the best results.

IN WHAT WAY CAN WE BETTER SERVE MAN-KIND?*

BY MAURICE E. FENTON, D. D. S., CLEVELAND, OHIO.

This is not a scientific question, in a true sense, yet it is a broad one when we go back fifty years and try to realize just where the profession stood at that time, and then see what it is to-day. The vast resources which are at our command make it well nigh impossible to estimate, or even guess, what the next half century, or even the next generation will bring forth, but whatever the outcome is depends largely upon the procedure and actions of just such bodies of intelligent men as are gathered here this evening.

Gentlemen, are we doing all that lies within our power as a society to help our fellow men? Are we doing all we can

^{*}Read before the Cleveland Dental Society.

as individuals to help those with whom we come in contact in our daily practice?

We must not forget that we are doctors in a broader sense, not only in the practice of dental surgery, but in the sense of one who teaches his fellow men, and how can we best accomplish this is what I wish to ask of you who have had years of experience. What I mean more especially is in the early training of those who will, sooner or later, become our patients. We all know from sad experience how often the parents are to blame for the neglect and proper care of their children's teeth. I may not only say of their teeth, but of their whole physical being. When they are young and need the most care, they usually get the least; but what they need most of all, is a start in the right direction, and if their parents can not, or do not take it upon themselves to do the starting, then surely it is the duty of some one or some institution to do so at the earliest opportunity.

In my mind, there is no nobler, wiser or more generous institution of learning than what is to-day called our kindergarten. We all know that our first impressions are lasting ones. Then why is it not so with the child? As a rule they learn more easily, and retain it longer at that age than at any other time. Why then should they not be taught something of the care and use of their physical makeup? It is not too early to make them understand that they cannot disobey certain rules and have health; they must also be taught to respect the house in which they live, for if they fail to respect themselves they will fail to respect others. How often do we hear the mother say how smart and bright her child is, and how he stands in his classes and keeps up with the best of them. They seem to bring every effort to bear upon their mental training, but utterly forget that they have such a thing as a physical being to look after. They are so anxious to get them in the grammar school at the very earliest period that they utterly ignore teaching them the care of self and the preservation of health.

Is it not that way all through their school life? Is there anyone here who does not know that with every class that

graduates from the public school there are many who are physically broken down through that long period of nervous strain? Would it not be far better if more thought, time and attention should be devoted to the physical man, even if at the expense of the mental? But that need not be, for what matters it if the school time be lengthened a year, or two years, if it be necessary? They will only be the better able to take up life's work; for with a trained mind should go a well-developed, sound and healthy body, and with that physique should go the knowledge of knowing how to care for and keep in health this most wonderful and perfect of all organisms that was created by God.

Then let us do our part; first, by putting forth every effort in the way of making our patients to understand the value in the relation to the care of health and the need of preserving and keeping their natural organs of mastication for the use our Maker intended, giving them instructions as to the care in every detail, not only in what to do, but what not to do as well, for oftentimes more depends upon the preventive of the disease than upon the cure.

Naturally our first and best work will be with the mothers, for they most certainly have the welfare of their children at heart, and by giving them proper instructions we may be comparatively certain that they will be carried out. Make them understand the necessity of having frequent examinations; better come too often than to wait until irreparable damage is done to the little one, saying nothing of the untold suffering the child may be passing through.

Gentlemen, what I would like to see—and what I expect to see before reaching the half-century mark—that every school in this broad and prosperous land of ours, shall and will be taught the science of health; and I trust the dental profession will do their part.

Our country leads the world in its thoroughness and magnitude of its dental colleges. May not our schools be first in teaching the science of self-preservation, and our specialty lead all the rest?

NECROSIS OF THE MAXILLE BY PHOSPHORUS POISONING.*

BY DR. O. S. HEINEMANN, CINCINNATI, O.

I may mention that lucifer-match workers are the most frequently attacked by this disease. I may also say that the inferior maxilla is more often affected than the superior maxilla, that is the reason I will speak of the inferior maxilla in general unless otherwise specified. Dr. Bristowe shows that in 56 cases under his care, that 39 occurred in the lower jaw, 12 in the upper and 5 in both jaws.

A remarkable case of secondary consequence dependent upon the tooth-disease, is probably the necrosis and exfoliation of more or less of the maxilla. I cite a case in my own charge where this disease attacked a child who was in the habit of placing matches in his mouth, notwithstanding the attention given him during play hours.

Now the relation of the phosphorus poisoned case to the necrosis, due to the fumes of phosphorus, have been proven analogous. Clear data have illustrated the questions of both the cause and the effect. To bring about the phosphorus disease, the agent must be applied in some form to the periosteum of some vascular surface which has immediate connection with the bone nutrition. Not only that, the application must be under particular circumstances of temperature and surroundings, as in fevers, but that the application thereof must exist some time or be prolonged.

The circumstance which binds the cause with the disease which follows is a predisposition, namely the exposure of the periosteum or otherwise in the patient. The only way in which this may have occurred, or at least in which the phosphorus affected the bone in causing necrosis, was through the pulp of a second deciduous molar exposed by caries. The poisoning of the tooth-pulp was the essence of the disease.

We now will find the severe combinations of bone affec-

^{*}Read before the Cincinnati Academy of Dentistry.

tion,—which gives us a clue in the malady—namely, the secondary consequences. The agent which produced the disease is, without a doubt, the oxidized phosphorus, in the form of the phosphorus or phosphoric acid, dissolved in the saliva.

Lorinser, to whom the credit of discovering this disease belongs, considered "that the blood was charged with phosphorus having an affinity for the bony structures, and that the action of the poison was localized in the jaws by the exposure to the application of the agent.

Before the disease can be brought on, the individual must have caries of the teeth, and perhaps an exposed pulp, which offers a direct channel for the agent to communicate with the periosteum. No doubt this is why the destruction of the tooth is a necessary pre-existing condition.

The symptoms of phosphorus necrosis do not differ from other forms of necrosis in these parts, but they are frequently accompanied by irritation of the bronchial tubes and pulmonary tract. Notwithstanding all these ailments, the patient's general health seems to be remarkably good. The symptoms usually begin with an ache kindred to toothache,—the pain being localized to some carious tooth (likely to be that channel of introduction of the poison.)

The disease advances slowly and rather undecided at first, with inconstant pain, but soon, however, the pain becomes more serious and extends about the side of the head and down toward the shoulder, and with this, severe pain, swelling and tenderness occur. The integument about the affected part becomes tense and distended. The teeth feel as though they have elongated, and extreme pains with consequent annoyances, are manifested when they are brought into contact with their fellows of the opposite jaw. The gums are swollen and livid, and this condition affects the mucous membrane of the cheek and lips, and consequently the teeth loosen in their sockets.

With all these symptoms increasing, suppuration soon takes place and brings with it fever, which is developed according to the severity and extent of the disease; the patient is seized with rigors and pyrexia, becoming very ill. Often delirium and agonizing suffering is borne, while the secretion of the foul and fetid pus often causes nausea and vomiting. Citing the severest cases, general mortification of the soft parts may occur and likewise edema of the neck and face, and death may be a relief to the patient's sufferings.

The discharge of pus occurs from around the necks of the loose dead teeth; but if the same points to the external, the approach is marked by an intense redness or an erysipelaslike appearance of the integument.

When the pus is discharged, the pains diminish to the comfort of the patient. The pus is at first sanious, or very thin and serous, but extremely fetid, being the characteristic odor of a necrosed bone.

The swelling attending the disease is often very great and wide-spread, especially so when the lower jaw is involved. The lips, cheeks, neck, the throat and chest, are swollen in lower jaw necrosis, while in upper cases, the eye may be closed, the nose and forehead swollen.

It will be well to note that in this disease,—the lower jaw is attended with a large and complete development of ossifying callus. None is found in superior cases.

Now the whole external and under-surface of bone is incased in a dense plastic exudate. This exudate surrounds the base of the lower jaw, and is converted into a mass of supplemental bone, which supports the sequestrum; this being bare within and behind and connects the sound portions of bone at its extremities, providing the whole maxilla is not involved.

As the bone becomes naked by constant alteration of the soft tissue about it, it becomes irregular and ragged. These edges can be trimmed smooth with a pair of nippers. The diseased portion of bone is bathed in pus and assumes a dirty black-grey color, or sometimes a clear white appearance. In syphilitic necrosis of the maxillary bones, the sequestrum is also coated very frequently with this same black-grey substance.

The extent of the sequestrum of the inferior maxilla is greater than that in the superior bone. It may include the large portions of the body of the bone, frequently the ascending rami and sometimes the coronoid processes, while often the articular condyles are involved. The shedding of the sequestrum is often interfered with on account of the callus which always forms.

In treating a case of phosphorus necrosis of the maxillary bones, we will find that in the early stages of the disturbance, and when the disease has not quite established itself, the patient should resort to mouth-washes, urinary and bowel excretants and have the suspicious teeth removed.

Should the local symptoms—extreme pain, swelling and infiltration of the soft parts or the inflammatory stage set in, one must take measures to relieve the tense periosteum and bone. Make incisions with scalpel through the gum whereever it is tender and swollen, and carry the point clear down to the bone for a relief to the affected periosteum.

If the stage of threatening has past, the extent of the inflammation will assert itself at once, and the whole of the affected portion of bone, which forms the sequestrum, is established.

When pus is present, drain the surface, but avoid lancing and scarring the integument of the face. To avoid the irritation from the loose teeth which have become necrosed also, they should be extracted and mouth-washes used, such as chlorate of potash and permanganate of potash. There are other preparations on the market that may answer the same purpose.

It may be some time before the sequestrum, in a case of lower jaw necrosis, may be removed, but in the upper cases, these dead portions can be removed more readily and without injury to the adjacent parts.

When the condition of affairs is such as to inflict the least injury, the portion of necrosed bone should be removed and the parts kept in an antiseptic condition. It is well to employ some salt of iron for the patient as a tissue builder, and the patient grows well. By this operation, or the removal of the sequestrum, the masticatory system has been interfered with, and therefore light food-stuffs, such as måshed meats, eggs, cod-liver oil, and many other preparations can be relished as a meal.

The results of phosphorus necrosis in which we find convalescence, are various. As to the general health, the individual usually recovers after the operation, the condition of the maxilla being very much destroyed. If the superior maxilla is affected, the patient will be miserably disfigured. In the inferior maxillary bone, a supplemental bone is left, and mastication can be carried on as in an edentulous jaw.

But just how far this loss, by the gradual absorption of the new bone, may be prevented by supplying it with a function through the use of artificial dentures, is a question of interest and practical importance.

The prevention of the phosphorus disease is very easily accomplished. If the laws so decreed that amorphous phosphorus be used instead of the ordinary phosphorus, the disease would cease to exist.

RECREATION.*

BY DR. E. C. BEGGS, MT. VERNON, O.

As the "melon cholic" days approach—the hazy, daisy, lazy days,—when the weary dentist feels a tendency to weaken his grip on the forceps, to lay aside the plugger and the mallet, and his foot grows weary of the engine's grind, visions of mossy banks and shady dells, of angle worms and bottled bait arise before him, and he ponders in his mind over the problem of whether 'tis best to send word to his patients that, owing to the serious illness of his wife's great aunt who lives in Honolulu, he will be unable to attend to their needs for a couple of weeks, or to give notice that his gold mine interests in Leadville make it necessary for him to take an extensive western trip.

^{*}Read before the Columbus Dental Society

The excuse being provided, some thought should be given to the kind of recreation most needed—that which will refresh and purify the mind, renew the strength of the body and make life more worth the living. No set rule may be laid down to be followed by all. The difference in temperament, health and environment demand that each should decide for himself what is most to be desired in this direction.

The dentist who lives in the large city, where his patients are of all classes, and he lives in the hurry, the noise and the bustle of every day life, should get away from people. Some quiet place in the country, on the lakes, in the mountains or near the sea shore is best adapted to his needs. Some place where the air is pure, the water and food good and wholesome, where "the flowers bloom and the birdies sing"; some place near to nature. Do everything—do nothing. It's all the same. With such surroundings one can't very well go wrong, and you are pretty certain to return with a brighter eye, a firmer tread, a steadier nerve—well equipped to take up again the "White Man's Burden."

The dentist of the smaller town, however, is already, no doubt, more in touch with nature and the surroundings of a country life than his brother of the city, and it may be more beneficial for him to take a vacation of a different sort. His time may be profitably, and with equal pleasure, spent in a trip to the larger cities. He is not necessarily compelled to make work of this. There are thousands of places of historical interest that most of us expect or at least hope to visit at some time or other. A two weeks' trip to some of these places can be made and thoroughly enjoyed as a vacation. The contrast from his usual duties and the every-day scenes will prove a rest to him and in turn will better fit him for the duties of his professional life.

But the subject of recreation does not always imply "taking a vacation." What is by far more important is that we who are busy from morning till night with the cares of a dental office—and what business or profession is more wearing or nerve destroying?—(this is no joke)—should each day find

some diversion that may be classed as recreation, so interspersed with the office work as to relieve the monotony of the daily grind. After hours of worry over a difficult case, an accident after we have a serious problem almost solved orwhat is probably the most annoying of it all—collections when we have a supply bill to meet, there should be something to clear the cobwebs from the brain, to relax the intense strain of the muscles and to give a fresh air appetite for dinner. A spin on a wheel, a turn at ball and bat—for the younger members of the profession—a brisk walk in the open, or, for indoors, a half hour with chest weights, Indian clubs, dumb bells or punching bag will work wonders. If I may be pardoned for a personal reference, I will say that a couple of years ago I had erected in one corner of my laboratory, well out of the way —I am fortunate enough to have a large room for this purpose —a punching bag. At intervals during the day, when business is not rushing, and always after I am through work, I take a turn at the bag. I find that it is one of the most invigorating of exercises. It brings into play most of the muscles of the body, starts the perspiration and broadens and deepens the chest. And the development of the chest is most essential to a dentist, as the character of his work has a contrary tendency.

There are, however, other forms of recreation that should not be overlooked; such as the reading of good books, magazines and other forms of pure literature; conversation on the questions of the day with those well informed; attending an occasional good play at the theatre, and such other forms as tend to keep the mind active and alert.

As I have said, however, each must select for himself that form of recreation best adapted to his own peculiarities. Let that form be what it may, be sure it is honest, pure and good; that it drives away dull care; that it strengthens the body, clears the intellect, broadens the mind, improves us in our profession and makes us better companions and nobler citizens.

PROFESSIONAL HONESTY.

BY W. BUZZELL, PORT CLINTON, O.

If men generally were possessed of foresight and good judgment, and were dominated by a desire to do what is fair and right, ethical discussions would be superfluous. But the perceptions and judgment of the best of men are more or less biased by self-interest, and hence it is of use to formulate rules of conduct, as has been done by the medical, dental, and some other professions.

Ethical discussions in professional circles often bear upon the relations of members to each other, or upon the worth and dignity of our profession, and the importance of impressing upon the public the value, especially the monetary value, of our services, and the high degree of esteem in which we ought to be held by them.

Now, it is not proposed to belittle the worth of the dental profession. There is no doubt that dentistry has added materially to the welfare of civilized man. Nor is it of little consequence how we behave towards each other, and to the closely allied medical profession. A man who has a nice sense of honor and courtesy will avoid all that is unfair or discourteous to his fellow practitioners. He will avoid many things that the laity do ignorantly or thoughtlessly, and therefore with little blame.

No one thinks ill of the layman who says, "Go to Dr. Smiler for dental work; he don't hurt like Dr. Grey Beard." Or "Get your physic of Dr. Pellets; his pills don't gripe like those of Dr. Bolus." But what would we think of a dentist who should busy himself by urging people to discharge their faithful old family physician and take his, the dentist's, friend instead? And especially, what would the other physicians think of him?

Or suppose some M. D., possessing no honor or courtesy, should undertake to influence your patients to go to his protege; I think there would be no difference of opinion regarding such a meddler, except, possibly, on the part of the beneficiary, for, as I remarked before, judgment is often biased by self-interest.

But my purpose was to deal more particularly with our relation to our patients. And here our discussion is necessarily onesided. We rarely have opportunity to discuss our mutual relations with them, except, perhaps, in the courts, and I was going to deal with ethics rather than law.

A patient comes to me with defective oral apparatus, and the question now is, what is my duty to him?

The patient is often looked upon, by the dentist, as well as by the physician and lawyer—and perhaps there are others—as a mileh cow which is to be made to yield as much milk as possible. And there is the temptation to sell him as much of our services as we can persuade him to buy.

Now when a man goes into a shop to purchase goods—food, clothes, furniture, supplies for every-day use, he is dealing with something with which he has more or less experience, and it may be assumed that he knows his wants and abilities, and the value of the goods, and can decide intelligently what he shall purchase, and is able to defend himself against fraud and the temptation to extravagance. And at the worst his only loss is a matter of dollars and cents, which may be replaced, offset by a little valuable experience. But he consults his dentist for something with which he is unfamiliar; he cannot judge for himself; he must depend upon the dentist both for advice as to what ought to be done and skill in doing it, and he has a right to expect us to act for his best interest. Whatever is decided upon should be done with all the care, skill, and thoroughness of which one is capable

If a carpenter, plumber, mason, tailor, artisan of any sort, slights his work in any way, we justly accuse him of dishonesty. Much more blameworthy is the dentist, who, through indifference or haste or other selfish motive, performs an imperfect operation and leaves his patient to suffer loss that may be irreparable. Failure on the part of the artisan may be made good with no permanent ill result, but failure on the part of the dentist often results in loss that money cannot replace.

For example, take a case of an approximal cavity in a molar or bicuspid, with overhanging walls, which it is proposed to fill with amalgam. If all weak, unsupported walls be cut away, margins properly beyeled, and a large well-contoured filling put in, it will take considerable time and patience, and perhaps cause some pain. Now, the dentist is in a hurry to get at the next

case, or is only anxious to get the case off his hands, so he scoops out the debris, smoothes the margins, leaving the walls overhanging, as formed by decay, stuffs in his amalgam, all "without pain," "warrants for a year," gets his dollar, and dismisses his patient with the tolerable certainty that at the end of the year the plug will still be there, and an equal certainty that the thin overhanging walls will be crumbling away, and the tooth going to destruction. The patient is told that his teeth are "too soft to hold a filling," and has them pulled out and a new set made.

Gentlemen, the honest dentist will do his work thoroughly. He may have told his patient that he will fill this tooth for a dollar, and he may find that it is necessary to cut away extensively; that it is necessary for him to expend much more time and labor than could be foreseen. Yet his guiding principle is to do his work with ail possible care and thoroughness, and that, too, without regard to the fee which may have been agreed upon. He owes it to his patient, to his profession, and to himself to do his best work at all times, and this is of more importance than the fee that he may get.

"Do you think I'm going to work for nothing?" some one says. But this is of small importance. I am talking of the honest dentist. The question of the honest patient is generally discussed more effectually in some other tribunal.

I said a little while ago that the patient had a right to expect us to act for his best interest. He needs not only our work, but also our educated judgment, and herein lies an important distinction between profession and trade. If the dentist were merely to fill, extract, and make artificial teeth according to instructions from his patient, he would be simply and solely an artisan. It would be absurd to apply the term "profession" to such dentistry as to the calling of the carpenter and mason who build stately and beautiful buildings, but do all their work according to plans furnished by the architect, who is the professional man in this case.

The dentist, however, is both architect and artificer of his work, and is responsible for intelligence and knowledge in one

role, as well as skill in the other. He is under a more than double obligation, and cannot shirk the responsibility.

We like to call dentistry an "art." It sounds well, while "trade" somehow has a plebian flavor. So let us stick to "art." Now I don't just know what art is. I really don't know much about art. I don't know first principles in painting and sculpture, and only enough of poetry and music to hold my tongue when others are talking about them. But I have a notion—I don't know where I got it—that art deals with the true, the beautiful, and the good.

If we look at a painting we judge of it according to its beauty, its fidelity to nature, the purity of its motive (if I am mistaken somebody that knows will kindly correct me), and our judgment necessarily compares with certain pre-existing ideals in our own minds.

Now, the highest ideal is the perfection of nature. Suppose we have before us a painting of the human face. Everything is perfect, the graceful pose, the rippling hair, the arched eyebrows, the sparkling eyes, the shell-like ears, the dimpled chin, the full ruby lips parted, showing—what is the matter with that right central incisor? Let's get a little nearer. Shade of Titian! if it isn't painted with gold bronze! Now, I don't think a gold tooth looks any better in the mouth than in the picture. It is not beautiful, it is not faithful to nature, and its motive is base. If such dentistry be "art," I can't see why we should exclude the tinsmith from the brotherhood of artists.

Gentlemen, I want to enter a protest against the indiscriminate use of gold crowns, and especially against the gold crowning of the six anterior teeth. Even gold fillings are a disfigurement, but for these there is an excuse. They are usually unavoidable, under our present state of advancement, but, gentlemen, I wish to make this broad assertion, that even when crowning of the anterior teeth becomes necessary, gold crowns are as unnecessary as they are hideous. They are a disfigurement fit to be associated with nose rings, tattooed faces, blackened teeth, and other kinds of ornamentation known only to savages. I have seen many such crowns on teeth that I know needed nothing more than one or two small fillings, and where there was no possible

excuse for such work, except that it was easy and profitable to do, and the patient could be induced to pay for it. I have heard a dentist advocate the use of gold crowns, on the ground that the work was easier, less gold used, and the patient would willingly pay more for it, all of which is true, but what an argument for a member of an honorable profession! Gold crowns are the most glittering attractions of the bargain counters of the "dental parlors."

I would not deny the usefulness of gold crowns. In very many cases of defective molars and bicuspids they offer the best, sometimes the only means of repair, but we are vielding to temptation and carrying it to excess because it is profitable and easy. I was in the office of a friend of mine a few days ago, and he showed me a large compound filling that he had just put in a molar. I asked him why he did not put on a gold crown. He claimed that filling was the better way, for it left the cervical portion of the tooth perfect as nature left it, nothing to cause the least irritation at the gum margin, and that the most perfectly fitting crown could not be left so absolutely free from any source of irritation as this, and that the filling was worth, as he expressed it, ten dollars more to the patient than a gold crown would have been. And he was entirely right. And I would go just a step farther and say that even if the filling had been amalgam, costing, say, one to three dollars, it would have been worth more to the patient than a gold crown. Of course, it takes more skill and patience and hard work, and more expense, to put in a large approximal gold filling than to shove on a hollow crown, and the profit is often less, but our duty is to do what is best for our patients, though it may not be most profitable to us. Still, I do not wish to condemn the use of gold crowns in cases of molars and bicuspids too far gone to fill, but in the cases of the six anterior teeth, their hideousness ought to be an almost absolute bar to their use. One would think that the very offensiveness of such work would prevent its ever becoming popular, but somehow, things which are at first offensive, become tolerable or even desirable when you get used to them. Tobacco, for instance, makes the beginner sick, and disgusts his mamma, but custom makes it an indispensable luxury. As Pope, the poet, not the prelate, says:

"Vice is a monster of so foul a mien
As, to be hated, needs but to be seen;
But seen too oft, familiar with her face,
We first endure, then pity, then embrace."

I think I have quoted this correctly, though I am always a little hesitant when I attempt to quote poetry. I once heard an attempt to quote by a gentleman who was toasting "The Ladies." He began:

"O woman in her hours of ease, Uncertain, coy, and hard to please."

Then he jumped the track and went on:

"But seen too oft, familiar with her face, We first endure, then pity, then—"

Being bashful, I came away.

Cases may arise where it is necessary to put gold crowns even on incisors and cuspids, but such cases, especially of the upper jaw, where they are most offensively conspicuous, are about as scarce as hens' teeth.

Then there is the patient's financial ability to be considered. I find my patient is a working man with a family; gets perhaps \$1.00 to \$1.50 per day; his teeth are in such a condition that I can repair them with amalgam for say \$10 or \$12. He can pay for this kind of service without privation. To fill his teeth with gold, and perhaps put on one or two gold crowns, may cost him three to five times as much, and put him in debt for some months. Is it my duty—have I the right as a conscientious man, desirous of doing my duty to my patient—to urge or advise him to take the more expensive course, so that I may secure the greater profit? I will only answer this in the words of the great Altruisit: "Whatsoever ye would that men should do to you, do ve even so to them"—the most comprehensive statement of man's duty to man that has ever been uttered. And if I act according to its letter and spirit, I will do the work in hand with all the skill of which I am capable, neglecting nothing that tends to the perfection and permanency of my work, and I will consult my patient's interest as I would have mine consulted were I in the same circumstances as my patient. So far as is consistent with the more important

functions of the oral apparatus I will aim to preserve the natural beauty of the teeth as far as my skill and my patient's ability will permit. Less than this an honest dentist cannot do.

EVOLUTION IN DENTAL SCIENCE.

BY S. B. PALMER, M. D. S., SYRACUSE, N. Y.

To the Ohio State Dental Society, through the medium of The Ohio Dental Journal:

Gentlemen—I have read the paper that was presented to your society by Dr. J. S. Cassidy, December, 1900. Even at this late day and long distance from you, I beg to take part with those who so earnestly and ably entered into the discussion. I trust you will excuse my enthusiasm in giving my belief of the importance of that meeting. If it does not mark an epoch in evolution of dental science at the very opening of the twentieth century, I am no prophet. I have sufficient reasons for thinking so. Early in my practice nature taught some practical, yes, personal lessons which were at that time premature because of the prescribed methods and materials in use at the time. On that line dental science had to conform to practice. I need not go over that ground. All will allow that there has been evolution in practice. We cannot speak so favorably for evolution in dental science. Some twelve or more years ago the great scientific discovery of the etiology of dental caries (so it really was) satisfied most leading minds in the profession that nothing more remained to be discovered. Had the paper which is now under discussion been read in almost any State in the Union a few years ago, it would have failed for lack of backing. "The men behind the guns" will go down in history.

The writer believes in evolution in dental science beyond the limits of science as recognized from work in the laboratory. There has not been a scientific discussion, to my knowledge, bearing upon the vital points, as I understand them, before Dr. Cassidy produced his paper. For several years past the writer's papers have been contrasted with the accepted science of etiology of dental caries, and pronounced a "vague theory" by authority, which seems to have settled the matter, and thus checked discussion. I am ready and do give the following excuse for such dismissal. Nothing is admitted in dental science that cannot be measured, weighed, tested, etc., so as to be convincing by demonstrations before an audience, or stand recording in tables. Evolution in dental science is a phase of science relating to vital organic bodies, which, if admitted, might possibly show that through neurosis, chemistry of organized life has something to do in directing dental caries in the composition of dentine, as well as from the environment through micro-organisms. I have believed in the latter for twenty-six years, and knew nothing of microbes at the time. The announcement at that time was premature. It antagonized practice; it had no precedence, and was not backed by authority. Later it has been denied a scientific foundation. During the interval clinical practice has established a science, in the minds of observing operators, quite above the restricted demonstrations mentioned. Had Dr. Cassidy's paper been written and read in New York or in the Eastern States, where like principles have been presented for discussion, less notice would have been taken of it. At least it has been my experience that only a small portion of dentists have made a study of the chemistry of organized living matter, also those who have attained most on the line of chemistry as recognized in physics, are the ones to denounce the theory as unscientific. I am satisfied now that etiology of dental caries is reopened for discussion. Not to undervalue any work that has been accomplished externally upon the environment, but, as Dr. Cassidy said, "In building up this simple organ, a tooth, vitality governed the selective affinities of the nutrient readicals with as much care as it does in the formation of any other tissue; and when this organ parts from the source of life, it still retains the impress of the vital force; it is still organized." The above statement in regard to the organization of tooth structure with the mention that "dental caries is a disease consequent on some neurosis that permits the local play of chemical affinities more or less destructive to the teeth at certain periods," show that evolution in dental science has awaited its fullness of time for recognition, which occurred at the opening of the twentieth century.

Like evolution in other phases of science, time was required to prepare and enlighten minds for its reception. The writer, for a number of years, has been engaged upon the principles so ably set forth in the paper under discussion. At no time has there been manifested the scientific support that the Ohio Dental Society gave in discussing Dr. Cassidy's paper. For fear that I might not live to see recognition of the principles involved in the new doctrines, I have been honored with the opportunity of presenting them to dental societies, and having the principles placed upon record in Pennsylvania, Connecticut, Massachusetts and New York. The last paper was a summary of my belief in regard to recurrent dental caries. It was read before the New York Odontological Society, February 19, 1901. After the paper had been type-written, The Ohio DENTAL JOURNAL was received, and I now give credit to Dr. Fletcher, who, in the discussion of Dr. Cassidy's paper, gave me an evolved title: "The Chemistry of Organized Life."

So much for the East. The West hitherto has shown less inclination to look over the orthodox boundaries of dental science. It affords me great pleasure now to add Kentucky and Ohio to the above mentioned States which will start the new century with evolution in dental science. I rejoice that the writer of the paper, now under discussion, and those who took such an earnest part therein, were distinct from the East.

The past year has furnished proof that empiricism and clinical practice have been storing facts as a basis for evolution in science upon the lines defined in the paper. It required an organizer to arrange them, and practical, observing operators to endorse them. The union of these forces made the Ohio State Dental Society meeting one of great importance; one that will mark an epoch in evolution in dental science.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

TOXIC EFFECTS OF ORAL SEPSIS.*

BY WM. HUNTER, M. D., ENG.

The effects I include under this title are those due to septic absorption, apart from any actual general infection.

They are extremely common, and, like all the other effects of oral sepsis, no less commonly overlooked.

The commonest manifestations of them are those I have already adverted to in connection with septic gastritis—namely, the dirty ashy-grey look and general languor, irritability, feelings of intense depression which I constantly find in these cases associated with oral sepsis, sometimes of the profoundest character, and yet without any local symptoms.

For these effects are by no means necessarily proportionate to the violence of the local symptoms. On the contrary, it is when local pain is absent that the oral sepsis is allowed to continue long enough to give rise to these toxic effects. At other times the *general* disturbances predominate.

They include not only the above general effects, but others of a more definite character. The following are among those I have met with:—

- (a) Fever—of obscure character—really septic.
- (b) Septic rashes.
- (c) Purpuric haemorrhages and bleeding from the gums, such as one often finds preceding ulcerative endocarditis.
 - (d) Profound septicaemia.
- (c) Lastly, a group to which my studies in connection with pernicious anæmia have recently specially drawn my attention, and to which I now draw attention for the first time—namely,

^{*}Extract from Jour. Brit. D. Asso.

nervous effects, denoting deeper-seated changes in the nervous system; effects which I would include under the title of *Toxic Neuritis*.

The Fever of septic absorption has come, as the result of my experience, to present certain special features. It denotes the degree of reaction of the body, not necessarily the actual amount of septic absorption. It is the equivalent to inflammatory reaction locally.

This latter denotes relatively healthy conditions; it shows that the tissues still have the power to react to the irritant.

There is a stage in septic conditions, as in other forms of infection, when the absence of local reaction is not only compatible with the profound septic effects, but, even more than any other circumstance, denotes the severity of the effects. I have known a patient to be utterly prostrate with subnormal temperature, extreme cardiac depression and feeble pulse, as the result of blood-poisoning; his hands and arms covered with a number of sluggish, dirty boils, none of them giving the slightest pain, or accompanied by any local inflammation; and I have seen in the same patient, a month later, when he was on the road to recovery, the most violent local inflammation, abscess formation, lymphangitis and fever, arising in connection with one of the sores on his hand.

In that case the actual toxic effects were greatest when the local effects were least. The absence of local effects was due to the very intensity of the poisoning. The tissues were able to offer no resistance at all. If the local effects had been as marked at the outset as they were at the termination, the general toxic effects would not have been so marked. They would have included the ordinary effects of blood-poisoning—namely, lymphangitis and high fever.

These statements as to the character and severity of the general effects may be illustrated by the following cases.

Case 7.—A lady who for several years had suffered from remarkable periodic attacks of fever and rashes, with marked nervous disturbance. These attacks had come on at regular intervals for two or three years, and I was called to see her

when she had one of her rashes. I found she had a typical blotchy septic rash over the legs, arms, and body. Her history was that about a month or two previously her dental surgeon. having had his attention drawn to it by the first case I have described, insisted on removing a tooth-plate from her upper jaw, which had partly grown into the upper jaw, and had been there for several years. Her condition was one of profound sepsis. Her periodic rashes, gastritis, and nervous disturbances were the acute manifestations of that. They had always been regarded as manifestations of gout.

Case 8.—A youth who had inflammation of his gums set up by withdrawal of a tooth. Extensive stomatitis set in, and spread from point to point until the teeth became loose and necrotic. Half the upper jaw became completely necrosed, and there was a foul gangrenous condition of the whole of the superior maxilla, an acute and profound septicaemia, haemorrhagic nephritis, and death. This case still further illustrates the extraordinary virulent character of the infection associated with diseased teeth.

Case 9.—I have now to point out that in connection with this dental caries you may have these pyogenic effects latent. Such a case was that of a man who presented no dental history during life, so far as could be ascertained. He died of pernicious anæmia. Post mortem, the condition found was the following: The teeth were necrosed in their sockets, which presented a sodden appearance, and in this particular case at the bottom of one of them was an alveolar abscess the size of a small hazel nut, leading by a sinus to the necrosed tooth. In connection with another tooth there was a smaller pus centre. Further, there was suppuration in the ethmoidal sinuses on the left side.

Of the existence of this profoundly septic condition there was not, be it noted, the slightest symptom, or the slightest suspicion, during life. The case is especially interesting, fully confirming as it does my recent observations and conclusions regarding the infective (partly septic) nature of pernicious anæmia, and the importance of oral sepsis in relation to it.

Toxic Neuritis.—This is an effect which is now drawn attention to for the first time, and appears to me to be worthy of study. As regards the importance of oral sepsis as a cause of neuritis, these observations have been led up to by my studies regarding the importance of oral asepsis in pernicious anaemia, and the frequent occurrence of nervous effects in that disease—numbness, tingling in hands and feet, loss of knee jerk, marked wasting of certain muscles, and local palsies.

I find that precisely similar nervous lesions are met with, apart altogether from pernicious anæmia, in connection with extreme conditions of oral sepsis, and in my judgment as toxic effects of the sepsis thereby occasioned.

A FEW IDEAS ON CROWNS.*

BY J. MOUNTFORD, L. D. S., ENG.

ALL GOLD MOLAR CROWNS.

It is, I believe, usually recommended to fit the band to the root. Doubtless this is a good method, but it unfortunately generally causes the patient considerable pain and discomfort, besides being frequently a lengthy operation.

The method I adopt for making these is as follows: After removing any remaining enamel and coning the root I proceed to take an impression in the following manner: I take a small piece of gutta-percha (I use Gilbert's) and shape it something like the terminal end of one's finger, about ¾ of an inch in length, and allow this to become quite hard, after which I heat the *surface* in the flame of a spirit lamp and pass directly to the root face, which should have any excess of saliva mopped away but must not be quite dry. The forefinger and thumb of the left hand press the gutta-percha against the buccal and lingual aspects of the root and the surfaces of the contiguous teeth, while the forefinger of the right hand adapts that portion covering the root face and the masticating surfaces. Steady

^{*}From Journal Brit. Dental Association.

but not hard pressure is exerted equally. The manipulation is done expeditiously; this is necessary because the guttapercha rapidly hardens as the surface only is heated. It is important that the pressure exerted is not increased after the first second, or a double outline will result. I do not attempt to take a large model, the root face and half of each of the adjacent teeth being all that is required.

I now take a still smaller piece of gutta-percha and repeat the process. After this is removed from the mouth I place it in cold water, dry it, the part corresponding to the masticating surface is heated in the flame of a spirit lamp, it is then placed in position on the root and the patient directed to close his teeth together but not tightly. If the teeth can be brought together without much effort I take the bite the first time, but as a rule I find it necessary to pare away a little, heat the occluding surface again, put it in position and place the forefinger of the most suitable hand on the buccal surface and direct the patient to bite firmly; I can then feel if there is any displacement. By this simple method I obtain a perfectly accurate bite. These are now cast in plaster of Paris, and thus I have a model only, and a model with the bite. I now cut away the part of the models corresponding to the gum line 1, 32 of an inch in depth, except where the root face is below the gum line, when I cut the plaster away still more so as to leave the outline of the root standing up 1/32 of an inch.

I have brought the thin, sickle-shaped knife with which I do this with me. I make a point of trimming the models myself, as it seems to me the one who has seen the root should do this. I also lightly scrape the boldest part of the approximal surfaces of the contiguous teeth. This is to ensure the crown fitting tightly against them, and also allows for polishing. The models and bite are now hardened by immersing them for a minute in a boiling saturated solution of borax. I have found this answers better than steare. If I feel quite certain of my model—and I usually do—the mechanic finishes the crown for me; occasionally, however, if by reason of the extension of decay much below the gum I am unable to get a clear

definition of the root face, I try the band in before finishing. The method of procedure in the workroom is as follows: The circumference of the root is first measured with fine wire, a strip of gold No. 3, 22 carat, hardened by the addition of 10 grains of platinum to each ounce (I have found this to work extremely well, retaining its shape while working, as well as its color in the mouth), is cut slightly larger than the wire, and an overlap joint, the edges being bevelled, is made and soldered in a Bunsen flame. Great care is now taken to fit this to the festooning of the gum as well as to the circumference of the root. This being done, a piece of composition—the hard variety of crown composition answers well—is fitted into the lower half of the band and the upper part is expanded by placing the blades of a pair of pliers within the band against the approximal surfaces and then opening the pilers; this is repeated until the band fits closely at its upper part against the adjacent teeth. The top is now struck up sometimes by means of a steel die such as can be obtained from the depots, at others from a zinc die made from a sand impression of a natural or an artificial tooth. I prefer to do all the soldering by holding the parts of the crown in a Bunsen flame. The solder I use throughout is Ash's No. 1. The band is made to the first model and then transferred to the second model for adjusting the bite. I know of no method which compares favorably with this for saving the patient pain and discomfort, or the operator's time. I also believe it is hardly possible by any method except working to a model to follow accurately the gum line—I refer to molars only—as well as obtaining that tight knuckling against the contiguous teeth which is so important for their future welfare, and comfort during mastication to the patient. I use Harvard cement for fixing the crown and I seldom use a post. If by reason of the entire loss of the crown I feel the need of a post I place a dental alloy pin carrying a large head obliquely in the palatal canal of an upper molar, or in the case of a lower molar in the distal canal.

I am of the opinion that all gold crowns should be almost entirely restricted to the molar region. There are, however, times when by reason of the vitality of the pulp, or the closeness of the bite, it is not only justifiable to use this method for bicuspids, but it is probably the only practical one.

SOME TROUBLES OF THE SOFT TISSUES OF THE MOUTH.*

BY A. H. PECK, M. D., D. D. S., CHICAGO, ILL.

Inflammations of the soft tissues of the mouth may be either systemic or local as to cause. The majority of cases which we are called upon to treat, as practicing dentists, are probably caused by local conditions. However, some of the most serious conditions that present for treatment are manifestations of constitutional diseases.

The first class of cases I will consider is found especially in the mouths of children, but not always, for the same conditions are not infrequently found in the mouths of adults. This condition is brought about purely by a failure on the part of individuals to keep their mouths clean. In this class of cases there is an accumulation of micro-organisms, of mucus, particles of food and other forms of debris which form a coating over the gums and mucous membrane generally. In dealing with such cases as these usually a good moral effect upon the patient is had by instructing him to secure a tooth brush and a suitable dentifrice to be used diligently for a number of days before giving the case personal attention. If, for any reason, this does not seem advisable, one of the best agents that can be used for the removal of these accumulations is peroxid of hydrogen, or some one of the agents of this class, being reduced perhaps one-half with distilled water. This should be used with a pellet of cotton and the pliers, thus thoroughly cleansing the mucous membrane with it. It will cut the material more effectually and cause its removal more thoroughly than any other agent that may be used. The use of pure peroxid for

^{*}From article in Dental Review.

this purpose is not desirable. From pure peroxid are liberated anywhere from ten to fifteen volumes of oxygen, which will, under certain conditions, burn or destroy the soft tissues. Diluted one-half there will be from five to eight volumes of oxygen liberated, which amount is sufficient. This agent, however, will not be as effective in removing the foul odors from the mouth as will some others. The use of a two to four per cent solution of permanganate of potassium is very effective by way of removing the odor.

Not infrequently in the use of burs in the engine, of discs or strips or various other forms of instruments in the hands of careless operators ugly wounds giving rise to severe forms of inflammation occur. Especially is this true if infectious material is carried into the wound by the instrument. And not infrequently, in connection with this form of trouble, much swelling results. The use of hot carbolized water is an excellent form of treatment. This should be thrown upon the inflamed parts for some minutes by means of a syringe, and is especially useful by way of relieving the pain and the congested condition of the parts. The use of a thin paste of eucalyptol and iodol, or aristol, will be found beneficial. If the eucalyptol is found to be unpleasant to the taste of any, a small quantity of some other oil may be added, such as wintergreen or cloves, for the purpose of modifying the taste of the eucalyptol. In using this mixture it should be rubbed into the wounded part, carefully but thoroughly, and permitted to remain for a few minutes before the saliva comes in contact with the wound. The use of campho-phenique,—camphor and carbolic acid,—in such cases as these will be beneficial. As a side thought, this agent will be found to be one of the best in controlling pain occasioned by the irritation, and frequently the inflammation arising from the excess of cement forced under the gums in setting crowns and bridges. When used for this purpose the excess of cement should be completely removed, the gums dried as thoroughly as possible and saturated with the agent for a few minutes. If any have not used tincture of myrrh for this purpose, you will find it to be an excellent remedy.

In inflamed, swollen conditions of the tissues over erupting third molars, which not infrequently give rise to severe pain, the use of the eucalyptol and iodol, or aristol paste referred to above, will be beneficial. This should be packed under the tissue as thoroughly as possible and left for some time. In these cases the use of hot carbolized water, as indicated above, previous to the use of the paste, is useful by way of reducing the inflammation and causing a cessation of the pain. In cases where it does not seem advisable to remove the gum tissue, and suppuration has resulted, the pus must be thoroughly evacuated and the parts treated as indicated above, with the addition of the use of diluted peroxid of hydrogen.

THE TREATMENT AND FILLING OF THE ROOTS OF DECIDUOUS TEETH.*

BY DR. G. S. MARTIN, TORONTO JUNCTION.

The dentist who "hasn't time" to bother with children—who does not love children, I was going to say—will not succeed in doing anything but the simplest operations for them, and these only with considerable friction and unpleasantness between operator and patient. He will succeed only in causing the child to so dread the dental office that in after years he will lose what might have been a good patient, and the patient will lose his teeth as the result of the neglect.

Operations entailing any pain should be led up to by perhaps several sittings, until the child has lost any early dread of the dentist, the tooth in the meantime, by sedative treatment, being kept from causing pain.

Where devitalization is deemed necessary, the dam should be applied, if possible, at every step. Failing this, napkins or pads of cottonoid may serve to prevent ingress of saliva.

The saliva pump is an invaluable aid in all operations in the mouths of children, and children may be kept quiet and interested for long periods by being allowed to hold the tube in position.

^{*}Extract from article in Dominion Dental Journal.

It is with some fearfulness that I approach the subject of devitalization. I may not be at all orthodox, but of late years I have used in deciduous teeth a minute quantity of arsenic, with twice as much cocaine hydrochlorate, for the prevention of pain. Ths. if left in a short time, from six to twelve hours, provided it is well sealed in, will be quite safe; at least, my only accident with arsenic was not in a deciduous tooth. Many authorities denounce the use of this drug as dangerous, advising instead such drugs as ammonia, or powdered cantharides. After devitalization is accomplished, tannic acid is sealed in for several days, to toughen and harden the pulp for easy removal. If the dam be applied, or napkins can be successfully used, the canals may be filled immediately on the removal of the pulp. Bleeding may be stopped by the use of hydrogen dioxid or pyrozone, 3 per cent.

In case of putrescent pulp, pyrozone may be used for thorough cleansing, and some good germicide sealed in for a few days.

In the selection of a filling material for canals or pulp chamber, the operator needs something that will seal hermetically the apex opening, and, being easily inserted, would permit also of easy removal. These conditions are, in the opinion of the essayist, best filled by a mixture of salol and paraffine. This mixture, kept in a test-tube, becomes liquid almost instantly on being dipped in hot water, and solidifies at once when transferred to canal on hot spatula, and worked down with smooth broach. To facilitate introduction, strands of cotton or floss silk may be introduced into the liquid and transferred to canal, packing down carefully with warm instrument. The pulp chamber may be filled with temporary stopping made soft and sticky, after which the tooth may be filled temporarily for a few days.

MEDICINAL OR MECHANICAL.*

BY W. D. COWAN, REGINA.

It is, indeed, a very exceptional case of hemorrhage that cannot be stopped with the mere use of a little bit of absorbent cotton

^{*}Extract from article in Dominion Dental Journal.

employed in a mechanical sort of a way. In fact I have not yet had a case that was not stopped in less than three-quarters of an hour, usually in a few minutes.

By taking a small amount of cotton between the thumb and finger, then placing it over (not in) the bleeding cavity, then exerting a gentle pressure thereon (first, however, having removed all the external coagulated blood which usually gathers in a more or less stringy condition), and maintaining the pressure for from one to two minutes, then allowing the air—for air is almost an essential to coagulation—to reach the cavity for an instant, and then returning the pressure, repeating this until the cavity is filled with a natural coagulated mass, the desired end will be attained without the use of any drug whatever.

In the case of a sensitive palate, of which we wish to get an impression, but cannot, because of the nausea induced * * * in my practice I have found the best way to handle this class of patients is to make up your mind to take from one to three weeks to prepare the mouth. I have discarded drugs altogether, and use only an ordinary sheet of pink wax to secure that condition where an accurate impression can be taken and a plate subsequently worn.

It is a fact that a person with a sensitive palate who has worn a plate for a short time can then endure an impression without trouble. My method is based on this fact. By taking a sheet of wax, heating it over a spirit lamp until it readily yields to pressure, and then with the fingers pressing it upon the palate, and around the buccal and labial portions of the arch until it conforms to the mouth just as a base-plate would, you can get one of the most agreeable artifices imaginable. The most sensitive person will permit of it being done, for there is nothing of a nauseous nature about it. It is smooth to the tongue, adapts itself nicely into the rugæ, is thin and light, can be worn with care sometimes for a couple of weeks, and acts in a capital manner to accustom the wearer to an unnatural substance in the mouth, and to prepare her for the larger and more nauseous denture. It is very seldom that a person who has worn one of these wax plates for even a couple of days cannot endure to have a proper impression taken.

In still another way I have used these same wax plates to advantage; it is immediately after a major case of extraction. I assume that where, say, a full upper set has been extracted, that it is the prevailing practice to at once take an impression and order the person to return next day for the plate. The intervening time is not one of comfort to your patient. It is also a common thing for the patient to dread the insertion of the plate on exceedingly sore gums. But it is the usual thing to find that, instead of hurting, the insertion of the plate eases the pain. Acting on this, it has been my practice for a long time to make a wax base on the impression I have taken, place it in the mouth, and tell the patient to wear it until she returns on the morrow. Of course it must be removed while eating. You would be surprised at the amount of comfort they extract from an artifice of this kind, and you would be still further surprised to find how much less inflammation there is where a contrivance of this kind is worn. Furthermore, it takes the rough edge off the wearing of a plate, so that when the patient comes on the following day she is already partially prepared for the inconvenience of the denture. If I had to take my choice between one of these and the drugs usually used, I would refuse the drugs, especially in a case where my patient had any driving to do to get home, as is not infrequently the case.

BRIEFS.

|Condensed from Contemporaneous Literature for Ohio Dental Journal.|

EASY REMOVAL OF AMALGAM FILLING.

Dr. Brockway applies a heated copper point to the amalgam filling he is about to remove with the drill, and asserts that it makes the operation much easier.

DO NOT EXTRACT LAST TOOTH.

Do not extract the last lower tooth in any mouth if it has any kind of a healthy attachment to the jaw. I would not allow the best dentist in the world to take out my last tooth on the lower jaw. Clasp it properly and you will get the blessing of a grateful patient; extract it and the chances are you will have to make excuses about full lower plates the balance of your days.—
W. H. Taggart, in Review.

TO CURE CANKER SORES.

When there is a disposition to the recurrence of canker sores, Dr. Black has said that the use internally of oil of cassia is one of the best forms of systemic medication. He tells us that he has succeeded in preventing the recurrence of canker sores in many cases by the use of oil of cassia when he has failed with the use of other drugs. In using oil of cassia for this purpose, twelve or fifteen drops should be used in a half tumbler of water and a teaspoonful taken three times a day before meals. This should be continued, to secure permanent results, for three or four weeks.—A. H. Peck, in Review.

ABUTMENTS FOR REMOVABLE CROWN AND BRIDGE WORK.

Dr. Nichol's method of preparing abutments for removable crown and bridge work, as shown in his clinic, is as follows:

A half-round wire of a size which, when bent upon itself, will be proportionate to the size of the canal or root in which it is to be placed (ranging from No. 15 to No. 18) is first bent upon itself, and then is tacked together at each end with solder; they are then separated slightly in the center, or between the points soldered. A piece of 33-gauge platinum plate is now wound snugly around this post and soldered. This tube is now placed in the root canal and made permanent by filling around it with gold. The post, acting as the post of the crown, through its springy convexity, enters the concavity of the tube with a snap, and holds it firmly in place.—Dental Review.

SHORT, CUSPED TEETH SHOULD BE USED FOR DENTURES WHERE THERE IS LITTLE OR NO RIDGE.

Where there is scarcely any ridge in lower or in upper cases, where the plate is liable to be thrown or lose its suction, use short cusps, or grind them off almost entirely. If we could anchor our plates as immovable as the natural teeth we could use any length of cusp that we wished, but in cases of flat lower ridge the long cusps will interlock, and it requires the wearer to bite exactly right, else it may dislodge the plate. The application of these two thoughts helps the patient to learn the use of the plate quickly and saves both patient and dentist annoyance.—*J. J. Reed, in Review.*

REFITTING DENTURES WITH NEW PROCESS OXYPHOS-PHATE OF COPPER.

Dr. Ames demonstrated the possibility of refitting dentures by simply placing some new process oxyphosphate of copper mixed to a stiff creamy state, upon the defective surface, and pressing accurately to place, allowing the cement to set in contact with the tissues.

This refit, it is claimed by Dr. Ames, will apply to cases in which a plate has been made soon after extraction, those in which tissue has become flabby and yielding, and those entire dentures in which a leak at the periphery easily admits air beneath the plate.—Dental Review.

HOW TO COLOR AN INLAY.

An inlay can never be made to match a tooth when one color is used in its construction. Take, for instance, an approximal cavity in a central incisor extending any part of the distance from the gum margin to the incisal edge. No matter how perfectly you may match either the incisal edge, which is one color, and the neck of the tooth, which is another color, the inlay will look badly, whereas if the neck had been made of yellow porcelain and the tip with blue porcelain or whatever color was necessary to match it, and the two colors had been given a gradual gradation by blending one into the other, the effect would have been very artistic.—II. H. Taggart, Review.

SUGGESTIONS FOR INLAY WORK.

Dr. Chas. F. Allen spoke concerning his experience in making porcelain inlays and offered some suggestions which were the result of his experiments in this line. He spoke of the use of pyrite as an investment, claiming it to be superior to anything else. To obviate breaking the gold by pressure in the cavity, he places it upon a piece of spunk and with an egg-shaped burnisher makes an indentation. Then it can be quite readily adapted to the cavity with much less likelihood of breaking it. When there is a hole in the bottom of such a matrix he lays a piece of heavy foil on the investment material and places the matrix on that and as the matrix settles into the investment the foil makes a good bottom. In cutting the groove around the inlay before cementing much difficulty is experienced in holding the very small inlays. This he overcomes by sticking the inlay to the end of a piece of orange wood with shellac, which holds it firmly and permits the operator to cut the groove readily. He uses kid to finish tamping in the matrix to place instead of spunk.—N. Y. Cor. Dental Review.

DEVICE FOR OBTAINING ACCURACY OF FIT OF COLLAR CROWNS.

This device explains itself. It consists of a tapered mandrel marked in sections and numbered, and a series of thin copper rings made to fit accurately each numbered section, each ring being numbered the same. When the root is prepared all that has to be done is to select a copper ring and adjust it to the root. With a little practice it is surprising how near to the correct number one generally selects the ring. If the ring we have selected be too large or too small, others are tried till a perfect fit is obtained. A few minutes suffices for this.

An impression is then taken with the collar in place, and plaster cast in to it, or if one prefers it, osteo is run into the root impression and plaster over that. The model we thus obtain enables us to adjust a crown accurately, by fitting a gold collar to the corresponding number on the mandrel. It saves the patient much trouble to work to a model—certainly it

saves the dentist's back—and by using copper rings one avoids the necessity of stocking a lot of gold collars or crowns, as some men do.—F. Rose, in Jour. Brit. Asso.

KOWARSKA'S CEMENT FOR HOLDING LOOSENED TEETH IN POSITION.

This procedure is to ligate the teeth together not in the figure of eight style but by tying the silk about the tooth and making several knots with silk, enough to fill nearly the interdental space, then encircling the next tooth and tying knots again in interdental space, etc., until the teeth are secured, and then this cement, which is made of celluloid, C. P. and then with this cement, which is made of celluloid, C. P. and Acetone C. P. dissolved together to make thick creamy mass, holds the parts firmly together. Apply the cement, about twice as thick as it seems it should be, for the shrinkage is so great that it remains as a film only if applied lightly.—Dr. Hinkins, in Review.

THE USE OF MERCURIC CHLORIDE IN DENTISTRY.

In preparing antiseptic solutions of mercuric chloride the operator will find that by dissolving the required weight of the salt in alcohol, and then adding enough distilled water to give the required strength of solution, he will have less trouble to secure perfect solution.

It will, of course, be remembered that the solution of mercuric chloride must not be made in metal vessels, or the salt will be decomposed, and the metal mercury, separating, will coat the vessel with an amalgam.

For a like chemical reason, nickeled instruments washed, through ignorance, in bi-chloride solutions, will cause a separation of mercury from chlorin and a deposit of mercury on the instrument, this mercury at once amalgamating with the nickel, even in cold solutions. This newly formed amalgam of mercury and nickel is then easily rubbed off in drying the instrument and leaves the steel surfaces of the instrument exposed, thus favoring rusting.

The antiseptic tablets of mercuric chloride usually contain

chloride of ammonium, in order to preserve the mercuric chloride unchanged and to give increased bulk to the tablets.—

H. H. Boon, in Stomatologist.

ARTICULATION AND OCCLUSION OF TEETH.

The grinding surfaces must all be ground, no glazed surfaces are adapted to the purpose. The grooves may be mostly ground before any are set up after the laws of mastication and the depth of the overbite is known. When the jaw is thrown to either side, say to the left, the cusps of the opposite side should strike in at least two places that the plate may not become unseated upon pressure and when the teeth slide into the largest occlusion from side to side, the grinding and crushing and the incising surfaces are all brought into their largest activity after the very fashion of nature herself. If, after the sets have been placed in the mouth they are found to be slightly incorrect, place a rope of soft wax on the lower teeth and let the patient bite firmly, then put them on the articulator as before; mix up in sweet oil a paste of red oxide of mercury; paint the cutting edges of either set; close the articulator and where the opposing teeth touch you can see by the red spots, thus continue to grind until a perfect occlusion is obtained, after which grind for the articulation. The satisfaction to the patient of scientifically occluded and articulated teeth is a source of deep joy to the dentist who desires not to see this work go, but to give the greatest maximum of usefulness to the patient himself.—E. J. Perry, in Dental Review.

SUGGESTIONS ON THE USE OF SULPHURIC ACID IN DENTISTRY.

For dental uses the strong acid is generally diluted with an equal volume of water. To obtain a sulphuric acid of exactly 50% strength, the practitioner may add 50 parts, by weight of distilled water, or 42.5 parts of strong acid; or, dilute the strong acid until its specific gravity is reduced to 1.398.

Should the acid be acting upon parts about the mouth have

the patient hold a mixture of baking soda and water [do not wait to secure a perfect solution] in the mouth for several minutes; then in like manner use a mixture of soap and water, and finally, a mouthful of pure olive oil should be used in the same way.

When strong acid drops upon the hands we find, in the chemical laboratory, the following treatment most efficacious: At once wipe off the excess of acid with cotton, rag or paper, then wash the parts freely with equal parts of water and ammonia, or lime water and linseed oil, and if heat and pain still continue apply zinc ointment freely to the burned surface. It will often be found that simply lathering the hand well with soap and water will be all that is required to neutralize the acid and prevent its burning.—H. H. Boon, in Stomatologist.

AN OBSCURE CASE OF DENTAL TROUBLE DIAGNOSED BY X-RAYS.

The patient, a young married lady, consulted me as to whether an occasional swelling of the right cheek, accompanied by considerable pain and persistent redness over the canine fossa, were due to a dental lesion. On examining the mouth the affected side was seen to be occupied by a central incisor, with a small gold filling in it, then smooth, pale, healthy-looking gum from whence the lateral and canine teeth had been removed, and then the bicuspids and molar in good order. All the teeth appeared to possess live and healthy pulps. There was no history of any antral trouble, and there was nothing to show the presence of any root, but on the inner surface of the lip I saw a bead of whitish fluid, and on passing a very small probe, found that it was the orifice of a sinus which ran upwards. I plugged the sinus with a little carbolized bibulous paper, and on the next visit slit it up. During the next month I saw the patient eighteen times, gradually dilating with tightly rolled bibulous paper. I asked Mr. H. Baldwin, my partner, to see the case, but nothing could be found, and the hole was allowed to heal, and all went well until April 30, when the pain returned. A skiagram was taken, which was exhibited to the meeting; it showed a root in the jaw, and once this was localized it was easily removed.—C. Shelling, in Jour. B. D. A.

CORRESPONDENCE.

Mr. Editor:—The report of the United States Consul at Munich, Germany, to Dr. Barrett, in regard to fraudulent dental diplomas, speaks of a "Diploma issued to a Dr. Fuchs by the Haskell Post-Graduate School of Prosthetic Dentistry."

The Consul evidently don't know the difference between a diploma and a *certificate*, certifying that the possessor has taken certain instructions in a special department of dentistry.

L. P. HASKELL.

Chicago, Ill., April 2, 1901.

SOCIETY.

TRI-STATE DENTAL MEETING.

This will be the largest meeting of the summer and one of the best. All roads run to Indianapolis and every dentist in the United States, who is conducting his practice in a legitimate manner, is urged to come and break bread with us. We do not care whether you are a member of a State Association or not, if you "do unto others as you would they should do unto you."

The third triennial meeting under the auspices of the State Associations of Ohio, Michigan, and Indiana will occur June 4, 5, 6, 1901, at Indianapolis, Ind. The German House, corner of Michigan and New Jersey streets, has been secured for the meeting and exhibits. The Central Passenger Association has

granted a round trip rate of a fare and a third, on the certificate plan. Any inquiries addressed to 131 E. Ohio street, Indianapolis, will be cheerfully answered. The program to date includes:

1. Paper, Charles N. Johnson, L. D. S., Chicago, Ill., "Critical Periods in the History of the Human Teeth."

Discussion to be opened by H. A. Smith, Cincinnati, O., and H. B. Tilotson, Louisville, Ky.

2. Paper, Frederick J. Capon, M. D. S., D. D. S., Toronto, Can., "Porcelain As An Art in Crown Work."

Discussion to be opened by John E. Nyman, Chicago, and Hart J. Goslee, Chicago.

3. Paper, C. M. Wright, M. D., D. D. S., Cincinnati, O., "Diseases of the Gums and Sockets of the Alveoli."

Discussion to be opened by Junius E. Cravens, Indianapolis.

4. Paper, W. H. Whitsler, M. D., D. D. S., Cleveland, O., "Dental Neurasthenia."

Discussion to be opened by Robert I. Blakeman, Indianapolis.

5. Paper, J. L. Young, D. D. S., Detroit, Mich., "Some Considerations in Modern Bridge Work."

Discussion to be opened by W. Wallace Mungen, Ft. Wayne, Ind.

6. Paper, Nelville S. Hoff, M. D., D. D. S., Ann Arbor, Mich., "A Study of Tooth Bleaching."

Discussion to be opened by J. S. Cassidy, Covington, Ky., and A. W. Harlan, Chicago, Ill.

7. Paper, William A. Heckard, D. D. S., Indianapolis, Ind., "Continued Anaesthesia with Nitrous Oxid Under Definite Pressure."

Discussion to be opened by O. N. Heise, Cincinnati, O.

8. Paper, George E. Johnson, D. D. S., Ft. Wayne, Ind., "The Human Face and Articulate Speech Divine."

Discussion opened by Grant Molyneaux, Cincinnati, O.

CLINICS AND EXHIBITS.

I. F. J. Capon, Toronto, Can., "Porcelain Inlays."

- 2. C. E. Esterly, Lawrence, Kans., "Some Compressed Air Appliances."
- 3. H. P. Carlton, San Francisco, Cal., "A Matrix, Knowles Plugger for Matrix Work, An Oxyphosphate Cement."
- 4. W. H. Cudworth, Milwaukee, Wis., "Porcelain Inlays."
- 5. C. V. Vignes, New Orleans, La., "Extracting Forceps With Removable Beaks, and New Amalgam Carrier."
 - 6. C. S. Case, Chicago, Ill. (to be announced).
 - 7. E. J. Perry, Chicago, Ill., "Prosthetic Wrinkles."
- 8. W. E. Griswold, Denver, Col., "System of Retaining Springs for Saddle Plates and Removable Bridges."
- 9. Hart J. Goslee, Chicago, Ill., "Porcelain Crown and Bridge Work." •
- 10. George B. Perry, Chicago, Ill., "Method of Mounting and Trueing Wheels for Engine and Lathe."
- 11. J. P. Carmichael, Milwaukee, Wis., "Abutment Piece in Bridge-Work and a Support in Extensive Gold and Porcelain Inlays."
- 12. John E. Nyman, Chicago, Ill., "Carved Solid Cusps for Gold Crowns."
- 13. R. B. Tuller, Chicago, Ill., "Some Suggestions About the Use of Matrices."
- 14. W. E. Harper, Chicago, Ill., "Exhibit of Prepared Cavities With Practical Suggestions."
- 15. J. J. Wright, Milwaukee, Wis., "An Appliance for Keeping the Field Dry, While Setting Crowns and Bridges."
- 16. W. E. Grant, Louisville, Ky., "Some Appliances Used in Orthodontia.."
- 17. J. W. Clark, Louisville, Ky., "Combination Filling, Amalgam and Gold at Same Sitting."
- 18. H. L. Ambler, Cleveland, O., "Filling Teeth With Improved Tin Foil."
- 19. C. R. Butler, Cleveland, O., "Adaptability of a New Form of Scalers."
 - 20. W. A. Price, Cleveland, ()., "An Application of Roent-

gen Rays in Dentistry: (a) Results Obtainable and How to Interpret Them—demonstrated with Lantern Slides; (b) Apparatus Necessary and How to Use It—demonstrated; (c) Practical Cases.

- 21. L. E. Custer, Dayton, O., (to be announced).
- 22. E. Ballard Lodge, Cleveland, O., "Matrix and Matrix Plugger."
- 23. S. D. Ruggles, Portsmouth, O., "The Removal of Excess Cement in Setting Crowns."
- 24. F. M. Bozer, Logansport, Ind., "Comparative Anatomy Exhibit."
- 25. F. R. McClanahan, Rushville, Ind., "Possibilities of the Dental Plate."
- 26. H. A. Moyer, Kendallville, Ind., "Richmond Crown With Soldered Filling."
 - 27. E. E. Reese, Indianapolis, Ind., "Porcelain Inlays."
 - 28. Blair Blackmarr, Jackson, Mich. (to be announced).
 - 29. W. H. Dorrance, Ann Arbor, Mich. (to be announced).
 - 30. J. L. Young, Detroit, Mich., "Continuous Gum Work."
- 31. John L. Sweetnam, Manistee, Mich., "Something New in Crown Work."
 - 32. L. F. Owen, Grand Rapids, Mich., "Gold Inlays."
- 33. H. D. Watson, Grand Rapids, Mich., "Seamless Platinum Cap for Porcelain Work."
 - 34. C. W. Miller, Chicago, "Contouring Pliers."
- 35: "A Scientific Instrument for Measuring Bulk Changes in Plastics."
- 36. Truman W. Brophy, Chicago, Ill., "Stereoptican Exhibition on Surgery of the Palate."

For further information address Geo. E. Hunt, Chairman, 131 E. Ohio St., Indianapolis, Ind.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-seventh annual meeting will be held in Rockford, May 14 to 17, inclusive. All members should make an effort to be present. The society is always glad to welcome

reputable dentists, who are not members, from this and other states.

The local committee has arranged for an informal reception on Tuesday evening in the parlors of the Hotel Nelson. A short program has been prepared, and all in attendance are cordially invited to be present and spend a sociable evening.

PROGRAM-ESSAYS.

- The Annual Address of the Society by the President.
 J. G. Reid, Chicago.
- 2. Report of Committee on Dental Science and Literature. A. W. Harlan, Chicago.
- 3. Report of Committee on Art and Invention. Hart J. Goslee, Chicago.
 - 4. "Why Fillings Fail." T. F. Henry, Streator.
- 5. "Cement Anchorage for Fillings." J. J. Reed, Rockford.
- 6. "Dental Jurisprudence." Edwin Hedrick, Esq., Peoria.
- 7. "Anomalous Cases of Malformed Teeth, with Suggestions as to Possible Causes." Israel P. Wilson, Burlington, Ia.
- 8. "Preventive Dentistry." Garrett Newkirk, Los Angeles, Cal.
- 9. "Air Chambers—Uses and Abuses." Alfred O. Hunt, Chicago.
- 10. "Orthodontia." Illustrated with lantern slides. J. N. McDowell, Chicago.
- 11. "Submarine Gold." Illustrated by stereopticon lantern. George A. McMillen, Alton.
- 12. "Antiseptic, Germicide and Disinfectant." A. H. Peck, Chicago.
- 13. "The Physiological Function of Saliva." J. B. Dicus, Chicago,
- 14. "Microbiology and Office Clinic." George D. Sitherwood, Bloomington.
- 15. "The Philosophy of Mastication, Relative to Artificial Dentures." B. J. Cigrand, Chicago.

16. Report of Supervisor of Clinics. J. E. Hinkins, Chicago.

In addition to the above about forty-three clinics, on various practical subjects, are promised from prominent dentists.

WISCONSIN DENTAL EXAMINERS.

The next meeting of the Wisconsin Board of Dental Examiners for examinations will be held at Delavan, commencing Tuesday, May 21st, at 9 a. m. All examinations are conducted in the English language in writing. A practical demonstration is also required, and applicants must furnish their own instruments and patients.

W. H. Carson, Secretary, 609 Goldsmith Bldg., Milwaukee, Wis.

OHIO STATE BOARD OF DENTAL EXAMINERS.

The next meeting will be held in Columbus, Ohio, beginning Tuesday, May 28, 1901.

Applicants must bring excavators, pluggers, clamps, rubber dam, and filling materials.

For further particulars and application blank, write

L. P. Bethel, Secretary,

Kent, Ohio.

MARYLAND DENTAL SOCIETY.

The fifth annual meeting of the District of Columbia Dental Society and the Maryland State Dental Association will be held in Baltimore, Md., May 16, 17, 18. Please mark these dates off on your appointment book at once.

B. HOLLY SMITH.
Chairman of Joint Committee,
Baltimore, Md.

MISSOURI STATE DENTAL ASSOCIATION.

The thirty-seventh annual session of the Missouri State Dental Association will convene at Sedalia, July 9, 10, 11, 12, 1901. A cordial invitation is extended to all reputable practitioners to be present.

B. L. Thorpe, Corresponding Secretary, St. Louis.

KENTUCKY STATE DENTAL ASSOCIATION.

The annual meeting of the Kentucky State Dental Association will be held in Louisville on the 14th, 15th and 16th of May, 1901. The usual hotel and railroad rates will be procured. Address the Secretary,

F. I. GARDNER,

656 Third Ave., Louisville, Ky.

NATIONAL DENTAL ASSOCIATION.

The fourth annual meeting of the Southern Branch National Dental Association will convene July 29, 1901, at Nashville, Tenn.

C. L. ALEXANDER,

Corresponding Secretary S. B. N. D. A.

NORTHERN OHIO DENTAL SOCIETY.

On account of the Tri-State Dental Meeting at Indianapolis in June, the regular meeting of the Northern Ohio Dental Society will be postponed until June, 1902.

W. T. JACKMAN, Secretary.

TRI-STATE DENTAL ASSOCIATION, I. K. I.

The Tri-State Dental Association, I. K. I., meets in Paducah, Ky., May 28, 29 and 30, 1901.

W. H. Brosman, Sec'y, Albion, Ill.

OBITUARY.

DR. THEODORE F. CHUPEIN.

At his residence in Philadelphia, Dr. T. F. Chupein, editor of "The Dental Office and Laboratory," died March 23, at the age of seventy-one years.

He was born in Charleston, South Carolina, in 1830,

where he received his education and lived until 1876.

He commenced the practice of dentistry in 1852, and was instrumental in the establishment of the "Charleston Dental Association."

In 1872 he graduated from the Pennsylvania College of Dental Surgery, and, moving to Philadelphia in 1876, occupied the position of clinical instructor in the college for years.

He was a prominent member of a number of dental societies, having been secretary of the Pennsylvania State

Dental Society for twenty-four years.

In 1858 he married Virginia M. Pohl, of Philadelphia.

His widow and three children survive him.

His long and active life was closely identified with every movement in the advancement of dentistry, and his death comes as a severe loss to the profession at large, as well as to his many personal friends.

O! MI! BON'T YOU MISS

THE

TRI-STATE DENTAL MEETING.

It will be the most enjoyable meeting ever held in this section.

INDIANAPOLIS, JUNE 4, 5, 6, 1901.

OHIO DENTAL JOURNAL.

VOL. XXI.

June, 1901.

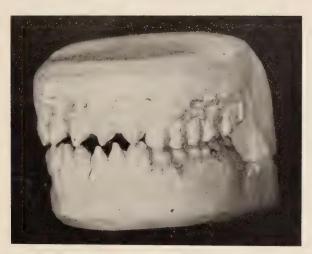
No. 6.

CONTRIBUTIONS.

AFRICAN TEETH.

BY W. H. WHITSLAR, M. D., D. D. S., CLEVELAND, O.

The accompanying engraving represents very clearly the plaster casts of the teeth of one of the natives of Central Africa.



Through the courtesy of an American missionary, Rev. Thomas W. Woodside, I am indebted for this rare acquisition

which has been placed in the museum of the Western Reserve University Dental College. Mr. Woodside writes very entertainingly concerning these strange people, and relates the difficulties of obtaining the impressions from which the casts were made. He says "The man whose impression I got was from Upper Zambesia. I had only common wax with which to take the impression, and had to take it under difficulties. The fellow speaks a different language from the people about here, and it was hard to make him understand what I wanted of him.

"The way they manage to cut their teeth is to pass a stick about the size of a finger through the mouth. The person bites upon this. A knife is set against the tooth and struck a sharp blow. This clips off the tooth. Of course the enamel is chipped off and you would suppose the tooth would decay at once. This does not seem to be the case.

"There is one tribe in the interior who remove the four lower incisors as a tribal mark. I have seen some of these people and hope to get an impression some day. We are three hundred miles inland from Benguella S. W. coast."

Mr. Woodside while on a recent visit to this country, his native home, studied dentistry sufficiently to be of service to his fellow missionaries, and relates in his letter the great benefit his service has been to his companions as wen as some of the natives.

TO STRENGTHEN VULCANITE PLATES.

BY GRANT MITCHELL, D. D. S., PITTSBURG, PA.

Some time ago my attention was called to a certain corrugated "Platinoid" contrivance for "strengthening" vulcanite plates, with a request for an opinion on the same.

As there is such a variety of these devices—all equally bad—to lead to the conviction that they are rather generally used, the opinion expressed to the exhibitor may not prove bad reading for some of the Ohio Dental Journal's subscribers.

The correct method of strengthening vulcanite plates consists, first, of purchasing the very best vulcanite the market can offer (and this is not sold for \$1.25 per lb.); secondly, carefully packing a measured quantity and thoroughly vulcanizing. By this I mean the slow application of heat in the beginning, consuming not less than thirty minutes in reaching the vulcanizing point (320° F.) and not less than one hour after that degree has been reached.

Follow these directions and you will have the strongest plate possible.

The employment of metal devices for the supposed purpose of imparting strength to vulcanite plates is an error. Because in proportion to their bulk they displace vulcanite and thus weaken the plate, rendering the liability to crack greater, and the ease of proper repair less.

If, in the process of vulcanizing, these metals could somehow dissolve and diffuse their metal tenacity throughout the plate I can conceive how they then might strengthen a cheap caoutchouc. But until such a chemical impossibility can be performed, metal strengthening devices only weaken. There is no sort of union between metals and vulcanized rubber. And such devices depend upon corrugated and roughened surfaces to hold themselves in the rubber—say nothing of holding the rubber against strain.

In the matter of good rubbers I would say the more highly colored are least valuable. For strength, the grey blacks are best. And while it is no part of my intention to advertise a particular dealer, I cannot refrain from saying that an experience of years has demonstrated that the brand of rubber known as "Pittsburg Brown" is far and away the strongest and best rubber sold—I've experimented with nearly all. The color of this rubber is something arcful! But its wearing qualities, its elasticity, its strength, marks it king of vulcanites. And though it costs four dollars a pound it makes for those who use it a good reputation.

METHOD OF RESTORING ARTICULATION OF SECOND INFERIOR MOLAR.

BY P. A. MERCER, D. D. S., MONTPELIER, O.

You have probably many times seen causes in which the *first* molar has been extracted many years and the second molar has come forward and is tilted, leaving a small space between it and the second bicuspid, which is a source of irritation, and the articulation is only on the posterior part of the tooth. Trim tooth as usual for crowning, then contour band, place in position and with modeling compound on the anterior portion of tooth have patient bite, remove and shape to size of tooth, replace and take plaster impression and proceed as with any other crown.

PRACTICAL HINTS.

BY DR. MARK HAYTER, DALLAS, ORE.

Before taking an impression have the patient thoroughly rinse the mouth with brandy, or alcohol diluted about one-half with water. This will benumb the tissues sufficiently to prevent retching or vomiting in all but the very worst cases.

When packing plain teeth, dip the little triangular-shaped pieces of pink rubber, which are to be used between the teeth, in chloroform. This will soften the surfaces sufficiently to insure them to stick just where they are placed. It is not necessary to warm them.

To give the final polish to a vulcanite plate use glycerine instead of oil, with the plaster. It is quite as effective and much nicer to use.

REPORT ON THE USE OF PULP CHAMBER PASTE IN THE TREATMENT OF EXPOSED PULPS.

BY W. B. FAHNESTOCK, D. D. S., CINCINNATI, O.

Several years ago our attention was called to "Pulp Chamber Paste," and since several other preparations that we had

been, and were then using, had not and were not giving the results sought for, to our entire satisfaction, we decided to test the merits of a preparation made by Dr. Kellogg.

The first case was a young man, age 20, with a first superior right bicuspid in which the pulp was exposed, after the debris had been removed from the cavity. The tooth was prepared for an amalgam filling, and when all was ready, we cut the pulp, just enough to cause bleeding; then after cleansing the cavity with 3 per cent. pyrozone, which at the same time controlled the hemorrhage, the cavity was thoroughly dried and a bit of the paste, about the size of a pin head, was pressed gently upon the pulp and spread completely over the exposure. A little soft amalgam was next introduced and patted down upon the paste, so as to cover it completely. To insure perfect contact between the pulp, the paste, and the amalgam, we applied gentle pressure by means of punk and a large round burnisher, for possibly a minute, during which time there was some pain; but it was of short duration, and the tooth was then filled with amalgam, in the usual manner. During the operation we were careful not to disturb the paste and soft amalgam previously introduced, and although the packing of the filling caused some pain, this subsided at completion of the operation. This was two years ago. I have seen the patient many times since and questioned him regarding the tooth, but he reports that he has had no discomfort—"not even a twinge of pain"—since the tooth was filled. Another case of particular interest was that of John D., age 45 years, who presented himself while suffering severely from an inferior right first molar. Pulp Chamber Paste was applied as above, but patient was so exhausted from severe pain that we were not able to operate thoroughly; so placed gutta percha over the amalgam that covered the paste, as we did not know what to expect under the conditions. Next day patient returned, unrelieved. We uncovered pulp and dressed with equal parts of tincture of aconite and oil of cloves, sealed cavity with sandarac on cotton and prescribed ammonol internally. Conditions were improved next day, so we continued the treatment. At length we were able to gain free access into cavity and found pulpstones. A paste of aconite, morphiae sulph, and arsenic was then applied, and the following day the coronal portion of pulp containing the calculus was removed, the stump covered with pulp-chamber paste and the patient dismissed. A few days later an amalgam filling was inserted in the cavity. This and another patient with same condition of the pulp, treated at about the same time (nearly two years ago) have been enjoying perfect comfort ever since. We have seen, since treatment, nearly a hundred of the teeth treated in this way and of that number only five have given trouble. Three of these cases were unsuccessful from the start, due, we believe, to some fault in our manipulation; for a second application of the paste secured relief, and they are doing well to this day. The two remaining cases had anemic pulps, and we scarcely expected good results.

In conclusion, we wish to call attention to some of the points where mistakes are liable to occur, in using Dr. Kellogg's preparation; for our experience gives us every reason to believe that if each little detail of the operation is carried out, that good results will follow in every case. The preparation deteriorates to some extent if not properly cared for. If the bottle containing it is simply corked, it will dry out and crumble to such an extent that it cannot be handled, and will also turn very dark. When in this condition if moistened with water it can be used, but it is not as potent as the fresh article, and a large percentage of teeth treated with it will be painful at intervals for several days, and in some exceptional cases for weeks. A convenient way to avoid this trouble is to take out enough of the paste from the bottle in which you receive it to last about a month; stop this bottle with a cork that has been dipped in hot wax. Seal the cork into the original bottle with hot wax and set it aside until more of the preparation is needed.

In every instance, before applying the paste, be sure that you cause the pulp to bleed; for unless there is some circulation in the pulp, it will not be readily affected, and the operation will be a failure from the start. The placing of the amalgam (in which there is rather more mercury than is allowed to remain in that which will be used for the filling) directly in contact with

the paste, and pressing this down so as to bring the paste in close contact with the pulp, without driving the paste from its intended position, is another matter of importance, since the free mercury unites with the iodoform in the paste and forms iodide of mercury, which is the antiseptic which we depend upon to prevent decomposition in the pulp. Avoid using coagulants in contact with the pulp for any reason, while operating, for they retard the action of the paste, and we find that patients will complain of more or less pain for several days after the operation when these agents are employed. Where a pulp is not quite exposed, but where there is danger of future trouble, we get as near to the pulp as possible and apply a devitalizing paste for twenty-four hours, when the pulp is freely exposed, a little being cut away and the P. C. Paste is applied as usual.

In some few cases we have had patients complain of pain for several days following this treatment, but pain has in all instances subsided after giving ammonol internally. Such cases, we believe, are due to the fact that the paste was not in perfect contact with the live portion that remained of the pulp; for they have all done well in a short time and no more trouble has followed. We are advised that Dr. A. E. Clark, of Chicago, has proceeded in a manner quite similar to this with every tooth that has been treated in his office since the attention of the profession was first called to this preparation, nearly three years ago, and to date he has had no complaint from any one of the thousand or more patients on whom the paste was used. His plan is to remove all the paste that he can, conveniently, put some of the preparation in each canal, then fill canals and cavity in the ordinary way.

In our own experience we have not, up to the present writing, seen the least discoloration in any of the live teeth treated with this preparation; and in a word, we have never found a pulp mummifier that is as perfect and sure in its action. By its use all of those very doubtful and often troublesome cases can be successfully treated and made to do long service.

SARCOMA.—CASES IN PRACTICE.

BY M. C. SMITH, D. D. S., M. D., D. M. D., LYNN, MASS.

First let me state that during fifteen years of active practice, as near as I can remember, I have only made the diagnosis of sarcoma once, so it seems a little strange that four cases should have recently come in in as many months.

Case No. 1-Mr. R., age 26, a little growth about as big as a pea. Inf. Rt. between cuspid and first bicuspid, teeth separated slightly. History: It had been there for several years, had been removed a number of times without any benefit, and after that when it got big enough to bother him he used to cut it off himself. My routine practice is always to have a microscopical examination made of every growth that comes for operation. My first impression was that it was a little innocent growth from the gingival border of the gum. With the use of ethyl chloride I removed a little piece for examination, followed it down as far as possible, which extended clear to the bottom of the alveoli, then my suspicions were aroused. Cleaned it out as thoroughly as possible, and cauterized it with pyrozone (etherial solution) 25 per cent. and packed with iodoform gauze; it healed in a few days. The pathologist reported fibro-sarcoma. A few days later in consultation with his family surgeon decided to wait, as it had healed up so kindly, and see if it had any tendency to return, and if it did, to do a radical operation. but when last seen it was perfectly healthy.

Case No. 2—Miss K., age about 30. Small growth on the gingival margin of the gum Sup. Ling. about the region of the first molar, diagnosed sarcoma; made an appointment with her to meet her dentist and arrange for an operation, but before the date set she saw her dentist and he told her that there was nothing serious and advised her to have nothing done, so it is not strange that I have not seen her since.

Case No. 3—Mrs. M., age about 45. A little growth about as big as a small split pea on the labial surface of the alveolar ridge about over the center of the root of the central, diagnosed

sarcoma. As yet her dentist has not been able to induce her to submit to an operation.

Case No. 4-Mr. S., age about 60. History: He had been to a hospital and they had removed a little growth from the roof of the mouth, and as it did not heal as they thought it ought they sent him to me to see if there was a tooth or a part of a tooth to blame. Watched for a few days and then found a growth on the palatine surface of the mouth, median line about half an inch from the center of the alveolar ridge, size and shape very similar to a slice cut out of the middle of a cherry about one-eighth of an inch thick. Under nitrous oxide and a little ether cut well around the growth it peeled very easily from the bone, which was thoroughly scraped. Growth sent to the pathologist, who reported fibro-sarcoma. The pathologist saw the case a few days later, and as it was looking well, would not advise a radical operation, as he had examined the specimen very closely and found that the cut had gone outside of any diseased tissue, and thought that if the bone had been well scraped it was a radical operation. Patient made a good recovery.

ARSENICAL STOMATITIS.*

BY H. C. KENYON, D. D. S., CLEVELAND, O.

Arsenious acid is one of the oxids of metallic arsenic. It chemically unites with basic elements, forming salts known as arsenites. It is classed among the escharotics and cauterants, but the exact nature of its action upon living tissue is not fully understood. Therapeutically the action of arsenic as an escharotic is peculiar. Its devitalizing action seems to be more pronounced than its escharotic effect, and the decomposition of the tissue is on account of loss of vitality rather than, as usual with caustics and escharotics, the vitality disappearing by reason of the tissue being decomposed directly by the chemical action of

^{*}Read before the Cleveland City Dental Society.

the drug. In other words, loss of vitality precedes decomposition in arsenical necrosis, while with escharotics devitalization is the effect of decomposition of the tissues by the chemical action of the caustic applied. It has been suggested that arsenic may form definite compounds with some of the elements of the tissues, which are again immediately decomposed, leaving the arsenic again free to attack the adjacent vital tissues, thus forming a chemical cycle whose circuit a small portion of the drug may repeat many times. This may account for the protracted and extensive destructive effects of a small amount of this drug. Whether this be true or not I am unable to prove, but the fact that a small amount of arsenic within reasonable limitations possesses the power to go on almost indefinitely devitalizing tissue, seems to suggest that such may be the true explanation of its action. In my opinion, the reason that devitalization does not actually go on indefinitely when once commenced by even a small quantity of arsenic is not because it spends its force, as described by some writers, but because it becomes so diluted by the exudates incident to the accompanying inflammation that the weakness of the solution limits further action, and not because its chemical affinitives are satisfied. Usually when arsenic escapes from the cavity in which it has been placed for devitalizing purposes, it affects the tissues near the cavity, and this more frequently happens with proximal or buccal cavities approaching to or extending under the gingivae. This, however, is not always the case. It occasionally happens that the drug is carried by the saliva to other parts of the oral cavity, and either by chance or from some predisposing cause, its necrotic action takes place at various points more or less remote from the source of the arsenic. In these cases slight soreness appears in about twenty-four hours. This soreness is accompanied by redness of the mucous membrane due to congestion. This is followed by the appearance of small ulcers upon the surface of the congested area. These do not seem to increase in size laterally very much, but grow deeper, more or less rapidly, according to the amount of arsenic deposited at that point. There is very little pain except a slight discomfort upon pressure until the periosteum is reached. After this stage the pain may be very severe and continued. Local anodyne or analgesic applications afford little or no relief, and in spite of all that may be done the patient is likely to suffer more or less severe pain for a period varying from two days to two weeks according to the amount of arsenic and the thoroughness of the treatment. In many cases of arsenical stomatitis the amount of arsenic deposited at any one point is so slight that the ulcers affect only the mucous and sub-mucous tissues, and often the disturbance is so slight that it is not mentioned by the patient and is overlooked by the dentist. These cases usually soon heal without treatment. This, however, is the bright side of arsenical stomatitis. It sometimes has another side.

Usually the first notice the operator gets of the trouble is when the patient returns at the appointed time for the removal of the arsenical dressing and tells him she has been suffering much pain around the tooth, or that the tooth has been very sore since about twenty-four hours after the dressing was placed in the cavity. Upon examination the distressing fact is discovered. Already the peridental membrane is affected, the gum tissue highly inflamed and possibly much devitalized and sloughed away, and the periosteum of the alveolus beneath the affected gum is also reached by the drug. The extent to which the necrosis will progress depends upon the amount of arsenic which has been absorbed by the tissues, the general tone of the tissues of the mouth and the general health of the patient, and upon the thoroughness of the treatment.

A third class of cases, and in my opinion the most difficult to treat with any degree of success, consists in those cases where the drug has escaped through the apical foramen, or those small foramina occasionally occurring in the apical third of the walls of the root canal. These accidents usually occur in young patients and may be due to carelessness in the quantity of arsenic used, but sometimes it is due to the patient's failure to appear at the time the dressing should be removed. If but a trace of the drug passes out of the root canal, the inflammation, while it may be quite severe, may not be followed by complete necrosis, and if taken in time the proper treatment may restore the apical

and peridental tissue to its normal condition without the loss of the tooth; but if any appreciable quantity of arsenic passes out of the canal through these foramina, necrosis of a more or less extensive portion of the apical soft tissue and adjacent bone tissue is almost certain to follow, and the alveolar process may become affected to such an extent as to include the roots of several adjacent teeth. The affection pursues practically the same course when it starts at the apex as when commencing at the surface of the gum.

The conditions which must be considered in the treatment are these: The soft tissue is devitalized on the surface and sloughing away may present a dark brown or black appearance. Underneath this the soft tissue is highly inflamed and congested. The nerve fibers are very hypersensitive, due to the chemical irritant effect of the arsenious acid upon them. There may or there may not be constant pain, but usually much discomfort is produced by any mechanical irritation such as is necessary in the treatment. In the hard tissue is the seat of the intense pain that accompanies local arsenical poisoning. The periosteum and peridental membrane are inflamed and congested like the soft tissue, and the condition of hypersensitiveness seems to be even more pronounced, the slightest mechanical irritation usually producing intense pain which continues for a long time after the irritation has ceased. The affected bone tissue usually presents a white appearance.

The treatment as in all other affections is first to remove the cause and then to assist nature in its work of repair. To remove the arsenic some of the forms of iron, and dialized iron is most commonly used for the purpose, should be applied to the affected area. Iron is a chemical antidote and acts by forming a compound with arsenic which is insoluble and therefore narmless. However the affected tissue is in such a condition that it will absorb very little or any medicine applied to it, so it becomes necessary to curette or remove by some other mechanical means all the tissue, bone tissue included, that has become impregnated with the arsenic. In the soft tissue this may be accomplished with well sharpened spoon- or hoe-excavators. These

may also be used to remove the necrosed bone to some extent, but a sharp bur in the dental engine is more thorough and more rapid, and since the operation may cause considerable pain, the more quickly it can be completed the better. When this is done the parts should be very thoroughly cleansed and there is no better agent for this than hydrogen dioxid. Following this the antidote should be applied, and a mere wiping of the surface with a pellet of cotton saturated with the iron solution is not sufficient. The application should be continued for some minutes and some pressure used in the hope of forcing the iron into the tissue that it may unite with any trace of arsenic that has penetrated beyond the reach of the curette. Following this some stimulating application should be used. Tincture of iodine serves the purpose very well. Carbolic acid has also been suggested and used by some. An antiseptic mouth wash should be prescribed for the patient to use frequently at home. If the patient is suffering so much pain as to cause much loss of sleep, it is well to prescribe some remedy that will have the effect to lessen the sensibility to pain and produce sleep. The patient should be seen often and if the first treatment does not arrest the action of the drug on the tissue, the treatment must be repeated. When the arsenic has been eradicated the lesion may be treated as a simple wound in the mouth. Sometimes the tissues are very slow to heal and require repeated stimulating applications.

WHY AND WHEREFORE?

BY L. P. HASKELL, CHICAGO.

In the March number appears an article entitled "To reduce the weight of full upper vulcanite cases with very heavy vulcanite side blocks."

I have failed in all my practice to discern any trouble from weight in upper dentures, and that, too, after fifty years' use of the heavy continuous gum work. If a plate is properly fitted to the jaw and properly articulated, I have found that it makes

no difference to the patient whether it weighs one dwt. or twenty, or even much more.

Then, again, why use "very heavy vulcanite side-blocks"? If the anterior teeth are gum sections, which I have long since abandoned, and so have a very large number of dentists, they are entirely unnecessary for the posterior teeth, and very objectionable from the fact that it is impossible to correctly articulate with the lower teeth, and the articulating is equally important with the fit and the adhesion.

AMALGAM FILLINGS.*

BY L. L. SHEFFIELD, D. D. S., TOLEDO, OHIO.

The qualities required in fillings are adaptability, indestructibility, resistance to attrition, color, durability and non-conductivity.

Amalgam, when properly made and manipulated, has these qualities, except color and non-conductivity.

As much depends upon the proper care, manipulation and packing of an amalgam filling, as upon the formula from which the amalgam is made.

Amalgams made from different formulæ show as big a range of variation in their tests and qualities as can be imagined.

The bases of the alloys found on the market are silver and tin. To these may be added other metals as desired, making a modified silver-tin alloy. And as these metals are combined, in proper or improper proportion, so will be the value of the alloy as a filling material.

There are three other qualities that are found in amalgam fillings, shrinkage, expansion and flow. Sometimes shrinkage and expansion are found in the same fillings; it depends mostly upon the formula from which it was made. In using amalgams made of alloys with less than 55% of silver in them, have both shrinkage and expansion. When using an amalgam made from

^{*}Read before the Toledo Dental Society, Jan. 11, 1901.

a formula with more than 55% of silver this double movement is lost.

Flow is a tendency to flatten and crawl out from between two points of pressure.

For the purpose of testing the different formulæ of amalgams, the amalgams were made into square blocks 8/100 of an inch in thickness. These blocks were used in the tests shown later on.

The same formula of amalgam may be made to show very different results by annealing it, i. e., placing the filings in boiling hot water for fifteen minutes. This will have about the same effect on the filling material, as if it had been kept for three years in living room temperature.

The annealing process makes the amalgam slower in setting, and takes less mercury in mixing. If the amalgam expands before annealing it expands less afterwards.

The metals which we use for making our alloys may be placed in the crucible covered with borax, then placed in the furnace and melted (the covering of borax preventing oxidation to any great extent), then thoroughly mixed by shaking the crucible and poured in suitable shaped moulds so as to be conveniently held in the vise for filing.

The filing of the alloy tempers it so it may or may not need annealing, according to the amount of expansion exhibited in the filling material when tested.

In mixing mercury with the alloy there should be only enough to soften it and have but very little to squeeze out. And when packing into the cavities, it should be packed with slightly serrated plugger points, large enough to nearly fill the cavity, and about as much force placed on it as can be commanded by hand, as condensing is what is needed. No smooth burnisher should be used because it will make poor adaptation to cavity walls. In filling approximo-occlusal cavities, a well-fitting, tightly bound matrix should be used; so as to have four good walls to properly pack the amalgam against.

In packing, care should be used to get the amalgam packed before it has partly set, as amalgam used after it is in that condition stands but little pressure, compared to what it should. Make cavities with flat seats as broad as at the occlusal surface, walls parallel with long axis of tooth, with beveled enamel edges to polish against, at a subsequent sitting. As much care should be used in the preparation of a cavity for an amalgam filling as for gold.

A few results of amalgam tests made at the Northwestern University Dental School, in Chicago, during the term of '97-'98 will help to show the results mentioned above.

An amalgam filling containing 1% of aluminum expanded when used fresh cut 166 points, or 166/10,000 of an inch. The same after annealing expanded 48 points.

- (1) A square block of amalgam 8/100 inch thick placed in the dynamometer, under a pressure of 218 lbs., yielded 5 points and broke. Formula, 40% silver, 60% tin.
- (2) A block same size as above, from Fellowship alloy, then used in the N. U. D. S. infirmary, stood a stress of 200 lbs., yielded 4 points, and when 250 lbs. were applied it broke. This amalgam was two days old.
- (3) Another amalgam block, formula 68% silver, 26% tin, 5% copper and 1% zinc, stood a test of 328 lbs., yielded and broke.
- (4) Another amalgam block tried stood a stress of 400 lbs. and when more pressure was applied it broke.
- (5) Another amalgam block tried, which was made of amalgam after it was too near set, stood a stress of 150 lbs. and broke.

This goes to show that it stands us well in hand to have our cavities entirely ready before mixing our amalgam.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

MODELS.*

BY E. C. MOORE, D. D. S.

Suitable models from which metal dies for swaging may be made:

If the model is imperfect or false the resultant denture is bound to be unsatisfactory.

An impression which has been secured by means of an improper material or the excessive use of a proper material is not to be depended upon. These are likely to have distorted the tissues so that a model made from them does not represent the mouth in its normal repose. An impression made with an improperly fitted tray is likely to be inaccurate. In practice I often, when unable to secure a desirable impression by the use of trays in my possession, get the best model I can and from it make metal dies and swage from suitable sheet metal a tray which will approximately conform to the case in hand. In such a tray, by the use of a limited quantity of suitable material, I am able to secure an accurate impression with little distortion of the soft structures. The impression is the matrix in which the model is to be cast, and unless it is correct the model will not represent the actual conditions of the mouth. Every feature of the mouth must be counterfeited in the plaster model so that it may be transferred to the zinc die.

All subsequent proceedings are of equal importance. The plaster must be properly prepared for pouring. The impression must be properly prepared to receive the batter and to separate from it after hardening has occurred. The impression material used will determine the medium used for favoring

^{*}From article in Dental Register.

separation of the impression from the model. If the impression be of wax or modelling compound, it is only necessary to wet it. If it be of plaster of Paris, it may be soaked for a few minutes in water previous to pouring into it the plaster batter. Sometimes it may be necessary to treat it to a coat of shellac varnish, and then to some oily substance.

The size and shape of the plaster model will vary with the use to be made of it and the character of the impression. As a rule, small models should be poured first and the plaster built up over the palatal arch so that the model will be uniform as to thickness; this will insure more uniform contraction of the plaster while setting and the vault of the arch will not be distorted by the unequal contraction in the thicker parts of the model which will set level in the moulding flask. This also impression it may be built up to any desired size by the addition of soft plaster and reversed on a glass slab to get a symmetrical model which will set level i nthe moulding flask. This also gives opportunity to tip the model so as to give it what moulders call "draft;" that is, a chance to withdraw a model containing considerable undercut from the sand without distorting the sand matrix. Care must be exercised in this matter that the model be not thrown out of plumb to such an extent as to render it impracticable to use a die made from it with any degree of certainty. For the reason that it is difficult to strike an unsymmetrical die with a swaging hammer directly over its equilibrium, and at the same time drive the plate in the proper direction. Usually it is possible to give the model considerable bevel or draft at the posterior part. This assists in withdrawing the anterior alveolar ridge from the sand without changing its shape. This beveling of the model should not be indulged to sufficient extent to permit rocking or tipping of the die while swaging.

The size of the model will depend upon the size of the metal die required. Usually a die should be only so high as to insure stability and convenience in handling. But sometimes a larger die is necessary to overcome special difficulties in adapting plate to irregular dies, or in utilizing thick plate. A high

die can be made where a low model has been used to get the matrix by placing a cast iron moulding ring on the top of the flask immediately after pouring the zinc into the mould, and then, before the zinc has crystallized, add to its height by pouring this ring full of melted zinc. It is a good idea to use a shallow die so that the melted die metal shall not have so far to fall as in a deeper mould, hence lessening the possibility of displacing the sand by pouring the heavy metal from too great a height. The beveled slope on the posterior part of the model here serves a good purpose. Instead of pouring the zinc directly into the mould it can be directed from the mouth of the ladle down this incline, so that it does not disturb the delicate lines of the sand matrix at all. After the matrix is poured level full then the small cast ring is adjusted to secure the needed depth to the die. This is an advantage as it gives the metal already poured time to chill and so prevent its perforation by the gases formed from the hot metal coming in contact with the wet sand. It also extends the shrinkage into the upper part of the die where it does not matter whether this part of the die corresponds to the model or not.

The preparation of plaster models so that they will readily draw from the sand is important. But the treatment of the surface of the model is of the utmost importance. Usually models are best trimmed to form as soon as the plaster has set, but they should never be varnished until thoroughly dry. A model that is varnished while it is still green will not pull well from the sand; it will preserve sufficient moisture to cause the sand to adhere to it, and so mar the sand mould when it is removed. A green model will not only not absorb the varnish, but it requires thicker varnish and more coats to get a smooth surface. This is, of course, objectionable, because it distorts the surface of the model and obliterates the sharp lines.

A model should be thoroughly dry before any varnish at all is applied. And this drying can not be facilitated usually by artificial means. Never try to dry a model on gas stove or Bunsen burner, as this will surely destroy the integrity of the model and render it impossible to secure a smooth surface. If pos-

sible let the model stand several days in a moderately warm and dry room, then it will take the varnish readily. The first coat of varnish should be rather thin, and when applied to a dry model it ought to penetrate nearly an eighth of an inch. A second or third coat applied with sufficient intervals for hardening will produce a smooth and impervious surface which will not favor the adhesion of the sand, and one that will readily pull from the sand mould.

The varnish should be applied with a large brush, and quickly, so as to prevent solution of preceding coats, which will give a roughened surface. Sufficient time should elapse between varnishings to allow the several coats to become hard.

METHODS FOR RECOVERING THE NOBLE METALS FROM DENTAL SCRAPS.*

BY S. HARBERT HAMILTON.

Old amalgam filling material and scraps, which may contain gold, silver, mercury, tin, zinc, copper, and other base metals, is placed in an iron retort and the delivery tube put under water. The retort is now brought to a cherry heat and the mercury distils over and is collected under the water, while the other metals remain behind in the retort and are subsequently separated.

To purify the mercury from oxide of zinc, or other extraneous substances which may have been carried over mechanically, strain through a small orifice. A convenient piece of apparatus for ridding mercury of mechanical impurities, is made by taking a piece of soft glass tubing, some six inches long and heating it, held longways in the flame of an ordinary gas jet, and, as the glass softens, by a steady drawing movement pulling it out until it parts. By carefully pinching off the point, a capillary opening of extremely small size is obtained. The large end of the tube can now be connected to the stem of a small glass funnel and the impure mercury poured in. Clean mercury wiil

^{*}From the Stomatologist.

run through the capillary, leaving the dirt and moisture behind, as they have not sufficient specific gravity to overcome the resistance of the capillary. By running the mercury successively through tubes of increasing fineness a very pure product may be obtained. In case no retort is at hand, and it is not required to save the mercury, the amalgam can be placed in a shallow crucible or iron dish, and the mercury volatilized. Do this where the fumes will not be inhaled, as they are poisonous.

After the mercury has been removed the remaining alloy is transferred to a porcelain dish, and dilute (1 to 4) nitric acid is added. Care is to be taken not to breathe the nitric oxide which comes off. The solution is evaporated to small bulk with a gentle heat and diluted with distilled water, and is filtered through a small filter. The precipitate contains the gold mixed with tin oxide, and is washed with hot distilled water until a drop coming through the funnel, when brought in contact with a drop of hydrochloric acid, gives no curdiness, but a clear solution. When this point is reached remove the beaker containing the liquid, which has the silver and base metals in solution as nitrates. Put in its place a porcelain dish. Pierce the filter and wash all the precipitate into the dish with hydrochloric acid. Add slightly dilute sulphuric acid and heat until copious fumes come off. Continue the addition of the sulphuric acid until only the gold remains as a finely divided powder.

The acid liquid is decanted from the pure gold and the latter collected, melted before the blowpipe with a little boric acid as flux, and the button worked up as desired. The tin solution is discarded. To the solution in the beaker, containing the silver and base metals, add hydrochloric acid until no more precipitate forms. Allow to settle and carefully decant the liquid. Wash several times by decantation with hot water until a few drops of the washings do not give a blue color with ammonia. The white precipitate is pure silver chloride. Add a small amount of water and about one-tenth its bulk of zinc filings, mix with a few drops of sulphuric acid and allow to stand. The zinc will drive out the silver as metal and take its place with the chlorine.

Wash the precipitate with very dilute (1-10) sulphuric acid to remove excess of zinc, and finally with water. Collect the silver and fuse with a little carbonate of soda and nitre. The filtrates contain only the base metals and are to be thrown away.

In the case of scraps of alloy which may contain platinum, gold, silver, copper, nickel, or other base metals, be sure no mercury is present; if so, drive out by heat. Dissolve the silver and base metals in dilute nitric acid and recover silver as above. The residue consists of gold and platinum. Digest with aqua regia. Boil out excess of acid, add a little hydrochloric acid, water and oxalic acid. This will throw down the gold. Filter and add metallic zinc or magnesium to the filtrate which will precipitate the platinum as metal.

LOCAL EFFECTS OF CHLORETONE.*

BY H. M. CLAPP, UTICA, N. Y.

In recent numbers of your magazine appears much praise of chloretone as a local anæsthetic for extracting. So much, indeed, that I have tried it, and think it guilty of "assuming a virtue that it hath not." The effects as an anæsthetic are not to be doubted, and are equal to any I have ever used, the extraction of a tooth being nearly, if not quite, without pain. In lancing, the gums present a frozen-like appearance, and the tendency to bleed is slight, but the after-effects are not in accordance with anything I have yet seen in print. Having my attention called to it by the complaint of two or three patients, I questioned others, and not one case have I vet found that has been free from soreness and inflammation, lasting from four to ten days. In some cases swelling and sloughing occurred. I then selected certain patients, using the utmost precautions in regard to aseptic measures in every detail, placing absorbent cotton about the portion of the gum to be punctured and

^{*}From Dental Brief.

mechanically clearing and sterilizing with antiseptic solutions. Still the same results. I have tried different formulas, having them compounded by a competent pharmacist, with a caution as to their sterility, and still the results are the same. I do not attribute the continued soreness entirely to chloretone's known peculiarity of being slowly absorbed, but while it is justly claimed to be antiseptic of itself, I believe in a saturated solution it is sufficient to cause intense inflammation, if not actually the destruction, of the periosteum. Is it not time a warning was given of its unpleasant, not to say damaging, character, that others may state their experiences?

A UNIQUE METHOD OF TIGHTENING OR INSERT-ING LOWER FRONT TEETH.*

BY DR. D. D. SMITH.

The preparation of the teeth for the reception of this appliance is a very important part of the operation. I used to cut away from the cutting edge of the tooth, and from that down until I could get my supports in; but I no longer touch the cutting edge of the tooth, but go down near the gums to the thick portion of the tooth, where you can cut away without doing it any injury whatever. It took me five or six years, with the infrequent application of this principle, to discover the advantages of this more recent method of preparing the teeth. Cutting from the lingual face and into the thicker part of the crown, we can get ample space for strengthening the supports with solder without changing the form or enlarging the tooth.

Now, having cut from the palatine face as indicated, and enlarged the canal, take an eighteen-carat gold wire about 15 or 16 gauge and fit it into the root, giving it a sufficient length to get a real support. Next take a piece of No. 30 pure gold plate large enough to cover the lingual face of the tooth, make a hole through it, and push this pin or wire down into it; put

^{*}Extract from International Dental Journal.

the pin in its place in the tooth, carrying the piece of gold plate with it, burnish the piece of gold onto the tooth itself at the point where it has been cut away. Cut off this piece of wire so the top of it will stand just above the tooth. Then you can make an impression, if you desire (I seldom do that), to enable you to handle it with ease until the final finishing of the case. Now just tack the piece of gold, after it has been fitted down on the tooth, with solder to the pin; after which you can adjust it perfectly to the tooth itself and contour the lingual attachment, strengthening it at the same time with solder. You want at least two of these supports in good firm teeth. There may be more of them if you like, as in this case, where I have three. The cuspid teeth are to be preferred for supports or piers.

Having the supports in the teeth as indicated, a plaster impression should be secured in which the supports will be securely embedded and may be removed without changing their relation to the teeth. Great care is necessary in making the cast from this impression, the teeth being small and usually long, but once made, the artificial teeth are to be fitted to it as though it were the mouth. You will notice that the gold on the lingual face in the specimen before you is shaped to perfectly represent the corresponding face of the natural teeth. The whole operation is a delicate one, and requires exact manipulation; it cannot be sent out to the mechanical dentist. You have to do the work yourself; at least, I have always had to do it. The teeth and the gold tubes are accurately fitted to the gums, a method which I use in all bridge-work. For facings I use the English (Ash & Sons) teeth almost exclusively.

With each individual tooth completed in its lingual construction and in its adjustment to the cast, they should be waxed together and to the supports in the plaster teeth. To avoid displacement after waxing, I cut away the plaster teeth in which the supports are embedded; this frees the piece from the cast when it is ready for investing and soldering, a part of the work which requires great care. When soldered and finished, the case is ready for adjustment.

One of the desirable features of this appliance is the fact

that the rubber dam is always applicable in its adjustment. The dam should be applied to as many teeth as may be necessary to give untrammelled access to the teeth which carry the supports. Having applied the dam and completed the treatment of the roots, with a good cement the final adjustment of the appliance, whether it consists solely of these supports for the tightening of loose teeth, or whether it carries one or more teeth, is readily accomplished. Any length of time may be given the cement to harden, as all is completely protected by the dam.

The case, when completed, exhibits no gold, has the appearance of the natural teeth, is perfect in cleanliness, and presents nothing as unnatural or objectionable in the mouth to the patient.

HOW I INSERT AN AMALGAM FILLING.*

BY T. F. CHUPEIN, D. D. S., PHILADELPHIA, PA.

We claim no originality in the following procedure, having obtained the ideas from some of the dental journals, and having tried it, found it to work satisfactorily.

First procure a pint bottle and nearly fill it with clear water, pour into this about two teaspoonfuls of sulphuric acid. Agitate this so that the acid will thoroughly mix with the water.

The cavity being prepared, and the dam applied—we use the dam as well for amalgam fillings as for gold whenever it can be used—we pour into the mortar a little more of the filings or shavings of the alloy necessary to fill the cavity. On these we pour about two teaspoonfuls of the solution referred to above and grind these thoroughly with the pestle. We next add the mercury and continue the grinding until the whole is a homogeneous mass. Then we pour off the acidulated water and fill the mortar with plain water. We then gather up the amalgam and dry it thoroughly between sheets of Japanese bibulous paper. We slightly squeeze the mass so as to get rid of some of the

^{*}From Office and Laboratory.

superabundant mercury, and then break off a small pellet and form it into a small ball which will readily enter the cavity. The rest of the mass we express so as to leave it comparatively dry, and then form this into little pellets. The first piece we pack into the cavity with ball burnishers or any instrument that will pack it well, and then add the dried pieces until the cavity is full.

If the cavity is one lacking one wall, we use a matrix to supply this wall.

If the contour is considerable, we combine a little quick setting alloy with the other, and fill in the same way.

By the time the cavity is filled the amalgam will have set sufficiently hard to permit of the matrix being removed, when the filling may be scraped or dressed into shape.

The day after or a week after the filling may be polished up. To do this we apply the dam again, using sand paper disks to obtain the smooth surface on the proximate surface and corundum stones or points in the masticating.

TRANSLATIONS.

Tannocreosoform.—This is a combination of tannin, creosote and formaldehyd, and is a brown, odorless and tasteless non-toxic powder, insoluble in water and glycerine, but soluble in dilute alkalies. It is an active antiseptic, suitable for both internal and external use. As much as five grammes may be given daily.—Nouveaux Remedes.

Laboratory Bench Dressing.—In order to enable a laboratory bench to withstand the action of acids and alkalies, and to retain a neat appearance, stain the table-top with the following preparation: Solution (a) Copper sulphate, 125 Gm.;

potassium chlorate, 125 Gm.; water, 1,000 C.c. Dissolve by boiling. (b) Aniline hydrochloride, 150 Gm., in water 1,000 C.c. Apply solution (a) with a brush, twice successively, allowing to dry in between. When dry, apply solvent (b) similarly, and again allow to dry. The next day rub well with a cloth and raw oil.—Oesterr. Zeits, fuer Pharm.

HAEMOSTATIC ANAESTHETIC SOLUTION.—A solution which combines the hæmostatic properties of gelatine with the anæsthetic action of cocaine and eucaine is prepared by A. Legrand as follows:

Ŗ	Pure gelatine
	Pure sodium chloride70 centigrams
	Eucaine bene-hydrochloride30 centigrams
	Cocaine hydrochloride70 centigrams
	Pure phenol 10 centigrams
	Distilled water to produce100 c c

The preparation is poured while warm into sterilized tubes; when cold it sets to a jelly, which liquefies again at 20 to 25 degrees C., and may in this state be used for injection. It has been found to give excellent results in dental practice, producing good anæsthesia and preventing hemorrhage.—Nouv. Rem.

Swedish Toothache Drops.—Clove oil, cajeput oil, of each. 10; chloroform, 5; acetic ether, 5; menthol, 3; camphor, 1. Dissolve.—Oesterr. Zeits. fuer Pharm.

Action of Alcohol on Metals.—Malmejac, in view of the practice sometimes followed, of storing alcohol in metal vesself, has instituted a series of experiments to determine the action of that liquid on copper, iron, tin, zinc, lead, and galvanized iron. Alcohol (95 per cent.), left in contact with these metals for six months, gave, in all cases except that of copper, a marked residue when a portion was evaporated. Not only was suspended matter evident in the liquids, but even after filtration, all but copper showed a distinct metallic residue on evaporation. The amount of soluble matter was greatest in the case of lead and least in that of tin; but the quantity of insoluble suspended matter was very marked with the last-named metal. —Journ. Pharm. Chim.

AZYMOL is an antiseptic for the treatment of the mouth and skin. The preparation is matched by the following recipe:—Menthol, 1; peppermint oil, 2; saccharin, 1; vanillin, 0.5; magenta trace; tincture of krameria, 4 to 5; alcohol (96 per cent.), 92.—Pharm. Centralh.

Lysoform.—This is a combination of formaldehyde with soap, introduced by Stephan for the disinfection of the hands; it is stated by Strassmann to be a valuable antiseptic in gynæcological work. It is perfectly soluble in alcohol and in water.—

Pharm. Zeit.

VULCANITE REMOVED FROM FILES.—When files are clogged with vulcanite, place them in a solution of one part saltpeter, three parts sulphuric acid and one part water. Then brush them with a stiff brush, adding sufficient soap. This process not only removes all the vulcanite but sharpens the files as well.—Zahntech-Reform.

A LOTION FOR PAINFUL DENTITION.—The following formula is recommended:

R Citric acid, Distilled water,

M. To be rubbed on the gums.

Correspondenz-Blatt.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

COCAIN ANTAGONISM.

Chloral hydrate is a decided antagonist of cocain, being able to counteract the action if doubly lethal doses are given to a dog. The antagonism is complete, influencing all the important organic functions. It is a one-sided antagonism, for cocain does not counteract poisoning by the hypnotics.—*Medical Record*.

TO PREVENT LOOSENING OF PORCELAIN TEETH.

When making plates, where the teeth are scattered we often find one or more porcelain teeth quite loose, owing to the contraction of the vulcanite. To prevent this, bend the pinheads from each other, forming a wedge. To prevent pinheads showing through finished plate, bend them down toward face of model.—Dental Hints.

CEMENT INSTEAD OF GOLD.

In children under fifteen why not use cement for filling proximal cavities in incisors for two or three years instead of filling with gold? A recent case shows the undesirability of placing large fillings in such teeth as both pulps died. At fifteen with the pulp dead in a girl's mouth the prospect is not inviting. How would you like it?—Dental Review.

A GOOD SPEAR DRILL. GRANT MITCHELL.

A small sized dentated fissure bur ground flat on two sides and spear pointed, makes one of the best of spear drills. To remove an old filling sink this spear drill through the middle of the filling to the bottom of the cavity, then with a slight sawing motion, move it out both ways until the filling is cut in two.

THE USE OF TUBE TEETH.

Did you ever use a tube tooth, incisor or cuspid instead of cementing a facing to the backing? In long "bites" this is a very secure method of restoring anterior teeth. Make your cope, solder the pin and sweat the crown on the pin with sulphur and set the crown with gutta-percha. Leave the pin long enough to project beyond the opening in the lingual part of the tooth. The pin should be of iridio-platinum.—Dental Review.

BACKING PORCELAIN FACINGS FOR CROWN AND BRIDGE WORK.

W. O. VALLETTE.

After facing is ground as desired, then a pure gold backing is carefully and accurately fitted. This is removed and a backing made of coin gold. The coin gold backing and pure gold backing are then soldered together. The result is a stiff accurately fitted backing. The chances of checking the porcelain are lessened as the latter is heated but once.—*Review*.

TREATMENT OF RESTRICTED ROOT CANALS.

J. F. WESSELLS.

We often meet with cases where it is very difficult, and to me sometimes impossible, to get all the way up into root-canals, as in the anterior roots of some inferior molars and the buccal roots of superior molars. In such cases, if I have any doubts as to whether all the pulp has been removed from these roots, before placing my chloro-percha and gutta-percha in place I put in a little mummifying paste and then insert the root-filling.—

Dental Brief.

TO REMOVE DISCOLORATION FROM PORCELAIN TEETH OR FROM JOINTS OF GUM SECTIONS BEFORE RESETTING.

R. F. MILLER.

The cause of discoloration of the porcelain teeth is of vegetable origin absorbed into the porcelain where the glazing has been removed. The use of chlorid of lime will remove it by placing the teeth in a solution with water for twelve hours; or twenty-four hours would give better results. I have by the above method removed all discoloration from the joints of gum sections before resetting.—Dental Brief.

A SEPARATING FLUID.

FRANK FOUNT.

Cover the impression with a solution of anilin in alcohol, and then with collodion. The anilin makes the ideal color-line, and collodion will not peel up from plaster previously treated with the anilin solution. The surface of the model will be perfectly smooth and the finest lines of the impression reproduced.—Dental Century.

GOLD BLINDNESS, OR RETINAL ASTHENOPIA.

L. W. FOX.

In gold blindness, the power to distinguish the gold from the walls of the tooth is lost after working a short time. This is caused by an overstimulation of the retina by the yellow rays of the gold. Exhaustion follows, and a scotoma, or blind spot, results, just as the refulgent rays of the sun will cause blindness by excessive stimulation. Looking at fused gold for a short time will produce similar results. All this work should be done only under the protection of properly tinted glasses.—

Dental Cosmos.

REINFORCING OCCLUSAL SURFACES OF GOLD CROWNS FOR BICUSPIDS AND MOLARS.

W. O. VALLETTE.

Swage a pure gold cusp with the same die used in making the cusp of the crown, the pure gold cusp so reduced in size as to fit into the crown. The inner cusp is then soldered to the cusp of the crown, with a small amount of solder. This renders the occlusal surface heavy enough to withstand wear and does not thicken the cusps, so that the crown cannot be set without a great deal of grinding. This method is especially recommended when crowns are placed over live pulps.—Review.

SOME REASONS WHY AMALGAM FILLINGS FAIL.

E. K. WEDELSTAEDT.

1. Placing the amalgam on a mass of decay. 2nd. Improper cavity preparation. This is subdivided into—a. Non-

extension for prevention. b. Non-removal of overhanging margins of enamel. c. Flaring margins. d. Improper anchorage; too large and too deep undercuts. 3rd. Using alloys of which nothing is known. 4th. Improper mixing and non-condensation of amalgam. 5th. Improper finishing of fillings, and 6th. Stress. There are others, but these are most important. —Digest.

A USEFUL JACK-SCREW.

W. H. MITCHELL.

Having a case recently when a long jack-screw would be an advantage, I found that some one had screwed an old jack into the end of a disk mandrel, and that I had one already in my case without the necessity of cutting a new thread.

Having found, therefore, that the thread of the various jack-screws and mandrels are the same, I send this wrinkle, hoping that others will find it as useful as I did. The head should be filled or ground square, and the mandrel cut the proper length of the case, and the "long jack" is ready for business—*Cosmos*.

PYEMIA FLLOWING THE EXTRACTION OF A TOOTH.

Dr. Zanadzki, of Warsaw, reports a case of fatal septic pyemia from the extraction of a tooth. One of the under molars was extracted, in consequence of which the patient's face became greatly swollen, and on the third day rigors with fever came on. After lingering nineteen days, the patient died. At the autopsy necrosis of the inferior maxillary was found at the point where the tooth had been extracted; the temporal bone was infiltrated with pus, and the dura mater of that side was covered with offensive pus. The soft parts adjacent were infiltrated, and the veins were filled with pus.

PULP DIGESTION AND IMMEDIATE ROOT FILLING. LUCIAN ARNOLD.

Clinic. Immediate pulp digestion, using kalium-natrium, and immediate root canal filling.

Pulp must be absolutely dead as pain results if alive. Kalium-natrium a very powerful saponifier. Clinician's method is to apply the kalium-natrium to the canal with smooth broach as long as there is any chemical action. The compound coming into contact with the moist contents of the root canal there is slight explosion and a flash. Apply until this flash will not occur. Then cleanse canal with 3 per cent peroxide of hydrogen and fill.—Dental Review.

CARE OF CUSPIDORES.

DAVID AIKEN.

Sometimes our cuspidores are neglected until they attract our attention by an unpleasant odor (all of us haven't fountain spittoons); and, even with daily attention, they will, during the hot summer months, occasionally disturb the sensitive olfactories of the delicate female, in addition to filling the operating room with swarms of the pesky fly.

A drop or two of "Creolin" is an immediate specific for the former and excellent palliative treatment for the latter trouble.

The remedy can be had at all drug stores at a small cost.—

Dental Hints.

HOW TO PREPARE FORMALIN SOLUTIONS.

Formalin mixes with water in all proportions. Being a 40% solution of formaldehyde gas in water, there are required:

To make a

```
10% solution of formaldehyde, I part of Formalin and 3 parts of water.
4% solution of formaldehyde, I part of Formalin and 19 parts of water.
1% solution of formaldehyde, I part of Formalin and 39 parts of water.
1% solution of formaldehyde, I part of Formalin and 79 parts of water.
1% solution of formaldehyde, I part of Formalin and 159 parts of water.
```

Percentage solutions of fluid formalin itself are made with equal readiness. One part of formalin and 39 parts of water make a $2\frac{1}{2}\%$ solution of the fluid. Solutions of from 1% to $2\frac{1}{2}\%$ of formalin are most readily prepared by adding from one-half to one and one-half tablespoonfuls of formalin to a quart of plain water.—Office and Laboratory.

SANDARAC VARNISH AND GUTTA PERCHA AS A ROOT CANAL FILLING.

DR. MA WHINNEY.

Pump the root canals full of alcohol to displace all moisture, then into alcohol pump the solution of sandaric varnish, then place the gutta-percha cones into canals in usual manner. Points to be gained are: First, the possibility of filling very small canals, which could not be filled with chloro-percha, and, second, the absence of soreness following operation.—*Review*.

POLISHING ALUMINUM PLATES.

H. F. NAUMANN.

"It is a very difficult matter to obtain a satisfactory finish to an aluminum plate. No matter what means are used in polishing, there is always a dull lead color, so unlike the bright appearance of this useful metal in its pure state. This can be overcome, after the final polish has been given with brush wheels, etc., by coating the plate with a strong solution of caustic soda. Use a pledget of cotton on pliers dipped in the solution, coating the metal freely on both sides, allowing it to remain two or three minutes, then wash thoroughly with soap and water. If there still be dark spots, apply again to those places until they disappear. The solution will not affect the rubber attachments and will enhance the appearance of the finished plate fifty per cent."—Items.

TWO GOOD HINTS.

C. C. JORDAN.

To repair backings under heat when partially burned off, take non-cohesive foil, say a fourth of a leaf, roll into a rope and while the investment is yet hot pack this rope where the break has been made. The foil will stick readily and by placing on a little soldering flux and solder, the backing may be nicely patched, thus preventing the necessity of stopping the work or discarding the teeth.

I find a simple and easy devise for wetting the wheel while

grinding teeth is to affix a small piece of sponge by means of a rubber band to the middle finger. This is easily held against the corundum wheel. This is simple, yet one of the handiest means for the purpose I have ever seen or tried. The quantity of water can be regulated just right with it.—Dental Hints.

RESETTING A CROWN WITHOUT REMOVING THE ORIGINAL PIVOT.

A. H. STEVENS.

A gentleman came to me with an upper right porcelain lateral with gold back, the pivot, a platinum one, being broken off flush with the root. I tried to remove it in my usual way, without success, the root being small, which allowed but little room for cutting around. I then made an instrument on the principle of a trephine, but bored much deeper, and a little smaller than the platinum pivot. With this instrument I bored well up into the root, and as I feared cutting it too thin ceased boring. Finding the pivot still firm, I made a tube the size of the pivot,—i. e., which would slide over it, soldered this tube to the gold backing, filled the tube with cement and proceeded the same as in setting a crown the usual way. After nearly a year I find it to be as firm as though set in the ordinary manner.—Cosmos.

THE USE OF THE TUNING-FORK AS A TEST FOR DISEASE OF THE MAXILLARY ANTRUM.

D. A. KUYK.

In the Laryngoscope, Dr. D. A. Kuyk calls attention to the use of the tuning-fork in cases of antrum disease where the diagnosis is obscure. By testing with the fork over the antrum and first and second molars, "if the antra are free and clear the tuning-fork (C. and Co.) will be heard with equal distinctness and for a like duration over each side and in either location." "If one antrum contains fluid the fork will not be heard so distinctly, perhaps faintly, perhaps not at all; if the opposite antrum is free the patient replies quickly and positively in the affirmative." The author notes that the same method may be applied to cases in frontal sinus disease, and perhaps ethmoid

disease, and certainly it is of no use in mastoid disease. He appeals to his *confreres*, especially those who have unlimited clinical material to corroborate his results.

EASY REMOVAL OF AMALGAM FILLINGS.

A. H. BROCKWAY.

Doubtless most of us have occasion sometimes to remove amalgam fillings, and this is usually regarded as a difficult and tedious operation. I have been asked to describe a method which I have employed for many years, and which has proved very simple and efficacious. It consists simply in holding a heated instrument on the filling until the heat is felt in the tooth and then at once burring it out before it again becomes cold. It can be cut like cheese. I use for the purpose an instrument having a very slender shank with a bulbous end the size of a pea,—one of the old Woods metal fillers of forty years ago. This is admirably adapted for the purpose, as the slender shank prevents the heat from radiating too rapidly.—International.

BRIDGE REPAIR.

P. T. CARRINGTON.

To repair a bridge in the mouth from which a porcelain facing has been broken, and the backing being quite thin, select a new facing of the proper shade; then drill the pin-holes at the proper place and grind the facing to fit. Around the holes on the lingual side drill a circle, if the backing will permit; if not, roughen the surface and also the pins. When all is ready, heat the backing and cement the facing to position; at the same time force it a little and bend the pins close to the backing with a heavy instrument. To complete, fill over the pins with flux: metallic sodium, one part; mercury, fifty parts. Solder: silver, eight parts; tin, ten parts; bismuth, one part; platinum, one part.

I have used the above method and find it better than filling over with amalgam. It makes a good and useful repair and one that is no trouble to the patient.—Dental Brief.

NITRATE OF SILVER FIBRE. JOHN G. HARPER.

The use of this article has been so satisfactory that every dentist should know how to prepare and apply it. Take long-fibre absorbent cotton, soak it in a saturated solution of nitrate of silver, allow the water to evaporate, repeat the soaking twice, and then when dry the preparation is ready for use.

A few fibres wound around a broach make a convenient form for use underneath the margins of the ginns and to carry the medicine into pockets formed by pyorrhea. A small pellet placed in a shallow cavity to arrest decay, especially in deciduous teeth, is an easy mode of application. The pellet is also used wherever a cautery is indicated, as in aphthous patches, sensitiveness from erosion, etc.

Those who believe in filling pulp-canals with cotton will find this fibre an improvement, and the bulbous portion of the pulp-chamber may also be filled with it. Cavities to be filled with amalgam can be rendered immune to future decay by applying nitrate of silver to the walls.—Digest.

A SHORT-BITE CROWN.

A. M. MA GEE.

Proceed to grind down the tooth as for a Richmond crown, take a wire measure, and for the band cut the gold wide enough to have the band extend above the end of the root as it passes down around it. Remove and solder a piece of plate inside of the band, adjust, drill a hole for the post while in position, pass the platinum post through, fasten with wax, remove and solder the post to the cap; then with pliers bend the extended end of the post over to make a good hold for future use; again adjust on the root. Select a rubber plate tooth,—one that is made for short-bite plate work, getting size and color to suit. Put a piece of wax in the cap, then slightly warm the tooth, place it in the cap, and request the patient to close the teeth together carefully, after which remove the entire piece and proceed to flask and vulcanize as for any rubber work. When fin-

ished, set in position the same as a Richmond crown. This crown is very natural in appearance, is strong, easily made, and I think it preferable to gold in most cases.

[Note.—White vulcanizable rubber may be used to artistic advantage in filling a crown of this character.—Ed. Dental Cosmos.]—Cosmos.

ROOT CANAL FILLING. J. F. WESSELLS.

After thoroughly cleansing and treating the canal, I wipe it out with alcohol and dry it thoroughly with hot air. I then pump or work into the canal the following mixture: Guttapercha, thymol, hydronaphthol, oil of cassia, and chloroform; after which I insert the gutta-percha cone and then fill the floor of the cavity with cement, subsequently inserting whatever other filling I think advisable. Of course, if cement is used for the entire filling, I complete the whole filling after I finish filling the canals.

The above-mentioned gutta-percha paste I usually make in one-half or one-ounce lots, as it is apt to dry out, even though chloroform be from time to time added. To make this paste, first dissolve two or three grains of thymol in one-fourth of an ounce of chloroform, to which add two or three grains of hydronaphthol; to this add as much gutta-percha as can be dissolved, then enough oil of cassia to make the mixture of a creamy consistency. The oil acts as a good antiseptic and also keeps the mixture from drying up so quickly. Oil of eucalyptus I have used in the place of oil of cassia, and with equally good results.—Dental Brief.

HEMOPHILIA.

"Elmer W. Roach, of Brooklyn, a student of dentistry, has died after three weeks of almost continuous bleeding from the nose and gums. This case of hemophilia is of special interest because Mr. Roach had reached the age of 22 years, and because about nine years ago he lost a leg in a railroad accident. If he

had been a 'bleeder' at that time he could not have survived the injury.—The Journal.

Every little while an item of this kind appears in the press. It seems remarkable that men who are giving their special attention to treatment of diseases of the mouth are not called to attend these cases. My experience is that hemorrhage in these cases can be readily checked. I recommend, as one of the most reliable agents, oil erigeron, in from one to four-drop doses, given from every fifteen minutes to once in four hours, according to the emergency of the case. This drug will be found most reliable in uterine hemorrhages, prolonged and too copious menses, menopause, and also in hemorrhoids and pulmonary hemorrhage. A solution of suprarenal capsules sprayed over the mucous surface affords speedy and temporary relief. In hemorrhagic tendency, quinine, administered several days before operation, has a restricting influence.—*G. L. C., in Dominion Journal.*

A SIMPLE METHOD BY WHICH THE INDIVIDUAL CHARACTERISTICS OF THE PATIENT MAY BE PRESERVED IN THE ALIGNMENT OF THE TEETH.

L. W. SKIDMORE.

When the patient comes to have his teeth extracted, that they may be replaced by artificial ones, I first examine the mouth, and if there are enough teeth remaining to be of assistance, I take a piece of wax, softened, and have patient close the teeth on it. This I remove carefully, and when the teeth are extracted they are washed and placed in their impressions in the wax. Plaster is then run around the roots, which holds them in position. When this is hardened it is turned over, the plaster varnished and oiled, the teeth of opposite jaw put into the wax on this side, and plaster run around them as before. If the teeth of the opposite jaw have not been extracted, it also is filled up with plaster, and we then have the teeth set in plaster exactly as they were in the mouth. This case is now set aside until the patient is ready for his new teeth, and when it is brought out and inspected, I assure you it often proves a valuable help, for you are thus enabled to preserve in the artificial

set the characteristics of each patient as they were in their natural teeth. You could not do this in any other way.—Digest.

HINTS ON SOLDERING.

J. P. BUCKLEY.

Do not use an excess of borax, and place only where you desire the solder to flow. Contiguity of surfaces or edges, to be united, can be obtained by swaging or burnishing together of surfaces, and by rasping ends with a fine, flat file and securely holding together of edges. Uniform heat, our third requisite. We have more trouble, perhaps, in cases to be soldered where an investment is necessary. The investment should be so trimmed as to be as small as possible without danger of fracturing in heating, and V-shaped places, if any, properly exposed so as to admit the air. Then if placed on burner and blow-pipe flames be directed first from the bottom and then on the sides until case is sufficiently heated, little or no trouble will be experienced in obtaining uniform heat. We should never attempt to finish our case, after soldering, without first heating it in sulphuric acid (50%), then neutralizing the acid by dipping case in a solution of sodium bi-carbonate and washing with water. The sulphuric acid dissolves the glass-like salt which may be formed by using an excess of flux and also thoroughly cleans any other material (particles of investment, etc.) which adheres to the case. The sodium bi-carbonate neutralizes the acid, forming sodium sulphate, which is washed off by the water.—Odontoblast.

TREATMENT OF BROKEN DOWN CROWNS CONTAINING HYPERTROPHIED TISSUE.

J. F. WESSELLS.

We sometimes have teeth, especially molars, presented for treatment with the masticating surface and most of the crown broken away and the cavity nearly filled with hypertrophied tissue from the pulp. My method in such cases has varied with the size of the growth and the condition of the crown of the tooth. If the growth is quite large I have found the applica-

tion of crystals of trichloracetic acid useful. This causes the growth to shrivel up to about half its original size. Then with a lancet or a pair of gum-scissors I excise the growth close up to the pulp-canal or chamber. Usually I have found it necessary to apply a little cocain for a short time before using the lancet. After the excision quite a hemorrhage will take place. This I do not try to check at once, but allow it to continue in order to reduce the congestion. By the use of trichloracetic acid the bleeding can be stopped very quickly when desired. The pulp can then be removed by the pressure method, or arsenic can be placed in the cavity and left to do its work. If the growth is not large I have sometimes applied the arsenic at once without removing the bulbous part, and have had just as good results. After proper root-canal treatment the canals can be filled in the usual manner.—Dental Brief.

RETENTIVE DEVICE FOR PORCELAIN INLAYS. ERICH SCHMIDT.

Dr. Schmidt, of Berlin, recommends the following method for obtaining undercuts in porcelain inlays, which avoids the trouble so often experienced in making undercuts with corundum or diamond wheels in the finished inlay. After having prepared the gold matrix, small pieces of copper in the form of wire, plate, or small globules are placed on the floor or at the sides of the matrix, after which the porcelain mass is introduced and fused in the usual way. After fusion the small pieces of copper will be exposed more or less from the back surface of the inlay, from which they are dissolved out completely by subjecting them to a bath of nitric acid, which removes the copper without damaging the porcelain in the least, after which the piece is ready for insertion. Dr. Schmidt finds that the undercuts or depressions, so made, materially aid in holding the inlay firmly in place.

Replying to an inquiry from the editor of the *Dental Cosmos*, Dr. Schmidt writes as follows: "In answer to your inquiry about the discoloration of the porcelain inlay during its process of fusion on the copper, I can assure you I never have

had any failure in that direction. Will you be kind enough to add the following to my publication: 'From many sides I hear the complaint that the nitric acid is very slow in dissolving out the copper. That is true if the thin layer of enamel over the copper is not ground away first. Put the inlay with a few drops of the acid in a test tube, warm over a flame, and in a few minutes the work is done thoroughly.'"—Cosmos.

A CAUSE OF FAULTY ARTICULATION OF ARTIFICIAL DENTURES.

STEWART J. SPENCE.

I want to point out one cause of faulty articulation,—one which becomes especially important as we abandon flat grinding surfaces and adopt those shaped according to nature. The source of danger lies in the flask. When a flask is new, all is well, but when it has been used for some time the guide-pins become worn or corroded, and can no longer be relied on to draw the two sections of the flask together in the positions they occupied before the removal of the wax. If the misclosure is lateral, the result will be that the cusps will not mesh into the depressions of occluding teeth, and therefore every closure of the jaws will tend to displace the plates laterally. If the misclosure of the flask be from front to back, or vice versa, the cusps of the bicuspids will fail to mesh correctly, and each closure will tend to force the plates respectively backward and forward.

About twenty years ago this problem of the closure of flasks came up in my mind, and I arrived at the conclusion,—or some other dentist told me, or I read,—that a close fit of guide-pins was unnecessary; that the general contour of the plaster would force the closing halves of the flask to their original position. I am now persuaded that this theory was wrong, and that only when the matrix half of the investment is deeply and evenly concave (which is very rarely the case) does the plaster control the closure of the flask to anything near that precision which is necessary for the proper articulation of artificial dentures.— *Cosmos*.

EDITORIAL.

OHIO DENTISTS.

Regarding a scoring editorial, published recently in the *American Dentist*, the editor of the *Dental Register*, in his April issue, says:

The editor of the American Dentist in the February issue comments at considerable length on the deplorable lack of legal restraint placed upon unqualified and disreputable practitioners of dentistry in the State of Ohio. According to his statement the State is over-run with professional rascals and incompetents, and there seems at present no prospect of change for the better. Several attempts have been made to amend the present statute so that a higher standard of qualification might be required, and that welldefined penalties should be required for illegal or incompetent practice. But because of the numerical or political strength, in its organized capacity, of the "degenerate" part of the profession, no adequate legislation seems possible. We are not inclined to look upon the matter so pessimistically as the editor of the American Dentist, and yet we do know that there is truth in the statement, but we are confident the present Board of Examiners is doing all it can to protect the people from incompetent practitioners. The editor of the Ohio Dental Journal is in a position to make an official declaration on this subject that would reveal the truth; and should it be as bad as represented it will assuredly stimulate the truly professional to make a concerted movement to have adequate laws enacted for the suppression of quackery and the protection of the public. Dr. Bethel, it is up to you.

A reply to the article in question, refuting misstatements, appeared in the March American Dentist. In this same issue appeared a note from the editor of the American Dentist, as follows:

The present board has done everything in its power to prevent the trash from practicing, but unfortunately it cannot undo the work of former boards. That there may be good men who have state board licenses, no one can deny, but this is the exception and not the rule.

ED.

It is not our intention to enter into a discussion of former

State boards, but will say that Ohio boards have always been handicapped by the existing dental law in this State. The law states that:

"Every person who may legally hold a diploma from any dental college in the United States or any foreign country, or who has been regularly since July 4, 1889, engaged in the practice of dentistry in this state, shall, upon payment of \$2.00 and producing satisfactory and reasonable proof of the fact that he holds such a diploma, or has been so engaged in the practice of dentistry in this state since July 4, 1889, receive a license and certificate of registration to practice dentistry in this state."

The Board of Examiners has little choice in the matter, but must recognize the evidence sent with applications.

Recently the secretary received the following letter from a junior student in one of the recognized dental colleges (not an Ohio college, however):

Kindly inform me When I can tak the state board examination I have now at the close of this course 2 years in dental colerige am now attending the coledge have been in acual practic for about 10 years wesh to practic in your state & Will finish next year I here refer you to Dean of our school Kindly forward me Weth the required information & leave me Know When I can tak the examination. yours Respectful,

Is a man who writes like that and shows at least so little observation, apt to make anything more than a "bungler" in dentistry? Yet, when he has graduated from this reputable and recognized dental college, should he apply to the Ohio State Board for license to practice in Ohio it would have to be issued under the existing law.

Last year every member of the present Board worked for the passage of a new and up-to-date law, but the measure was killed and by dentists, too.

During the three years the present Board has been in existence they have issued 764 licenses. Of these 729 of the applicants were college graduates, 27 licenses were issued on examinations and 8 to those who gave abundant proof of having practiced in Ohio prior to 1889. Out of 72 candidates for license by

examination only 27 were found qualified and passed. During the three years of its existence the Board has brought many suits against illegal practitioners and has been the means of making more than one hundred of these illegal practitioners close their offices. The Board has at all times worked for the best interests of the profession and if there are "incompetents" practicing in the State it is no fault of the present State Board. As we have said many times, Ohio needs a more stringent dental law, and the profession ought to wake up and demand it.

PERFECT (?) EDITING.

The editor of *The Dental Digest* in an editorial, "Editorial Carelessness," published in his March issue, scolds us for some errors, typographical and otherwise, that appeared in the article by Professor Cassidy published in the January Ohio Dental Journal. We acknowledge that the errors did appear in that article, for which we are extremely sorry, as it was one of the most scholarly papers of the year.

We dislike excuses, but feel justified in stating that copy for the January number was exasperatingly delayed by the stenographer who made the report of the State society. The copy did not reach the printers until it was time for the January issue to be out, and when proof reached the editor it was exceedingly late. Proof was duly corrected and returned to the printers, with the request that they make corrections, but to save time need not send revised proof as usual. When the article appeared, lo, there were the errors still uncorrected, although they had been corrected on the proof returned. Just how the printers overlooked this galley we have been unable to ascertain, but that they did is evident.

The editor of the *Digest*, referring to the errors, states: "Page 1, line 11, 'Buzelius' should be 'Berzelius.' Line 15, 'The complete "distinction" of the tooth should be "destruction." Page 3, line 31, 'leucomia' should be 'leucemia.' Page 4, line 18, 'licithin' should be 'lecithin.' Line 20, 'protogon' should be 'protagon.' Page 5, line 26, 'neurosis' should be

'neuroses.' Page 6, line 34, 'neurosis' should be 'neuroses.' Page 7, line 31, 'odic,' we are unable to find in the dictionary."

Well, well; if you are unable to find even so small a word as *odic*, we would suggest that you have someone help you. It is not only to be found in the dictionary, but was used correctly in the article criticised.

Now the learned editor of *The Digest*, this critic, published the same article in his February number, page 110. Let us turn to that and see a sample of perfect (?) editing. Page 110 of *The Dental Digest*, line 33, we find the word "Buzelius" which should be "Berzelius." Line 37, "the complete 'distinction' of the tooth" should be "destruction." Page 112, line 14, "leucomia" should be "leucemia." Line 34, "licithin" should be "lecithin." Line 36, "protogon" should be "protagon." Page 113, line 33, "neurosis" should be "neuroses." Page 114, line 37, "neurosis" should be "neuroses."

This is a sample of this critic's perfect editing.

In the editorial referred to he also states that: "It is the duty of every editor, dental or otherwise, to edit and prepare articles for publication, and failing in this he does not deserve his title."

Also, "To have the authors of papers made ridiculous by utter lack of editing is unbearable."

We think so, too, and hope that Mr. *Digest* editor will hereafter heed his own advice and make fewer such egregious errors as appeared in this article in his February number of *The Dental Digest*.

Were we disposed to do so we could find fault with this *Digest* editor for treating contributors unjustly by holding their contributions nearly a whole year before publishing them; and many other things that are none of our business. But we would not stoop to such a despicable thing any more than we would go snooping about his territory trying to steal what justly belongs to him.

Of course, there is but one perfect editor, and that is He of the *Digest*—in his own mind.

In Mark Twain's story of the "Jumping Frog," the stran-

ger, after carefully inspecting Smiley's so-called prize frog, says:

"Well," says he, "I don't see no p'ints about this frog that's any better'n any other frog."

And we "don't see no p'ints about this astute editor, of the Windy City, that's any better'n any other editor."

NEW PUBLICATIONS.

Dental Electricity.—By L. E. Custer, B. S., D. D. S., Lecturer upon Dental Electricity in Ohio College of Dental Surgery; Member National Dental Association; Ohio State Dental Society; Ruentgen Society of the United States, Etc. Published by the Author, Dayton, O., 1901. Price, net, \$4.00.

There has been a growing demand for a work on electricity as applied in dentistry, and in this new book the dentist will find just what he has been looking for. It is not a mere rehash of general electrical works, but a concise treatise on the principles of electricity in general and its application to dentistry in particular. Up to this time there has been no work to which the dentist might refer for information upon the electrical questions with which he has to deal, without going over much that is foreign to the subject. In this book, however, the author has incorporated just that information that one needs to acquaint him with the general principles of electricity, its controlling appliances, etc., and its application to all departments of dental work.

The author treats of electricity in dental practice in the introduction. In this he points out the advantages of electricity over water motor, or other power, and makes many practical suggestions of value to the dentist. Chapter I. treats of the Nature of Electricity, varieties of electrical currents. Chapter II., Electrical Terms, such as potential, volt, ampere, ohm, watt, and coulomb, are not only defined, but the various sub-

jects treated at such length as will give one a thorough understanding of each.

Chapter III. treats of Magnetism. Chapter IV., Sources of Electricity: Thermo, Voltaic, Dynamo, Frictional, Pyro, Photo, and Vital electricity. The subject of batteries is next considered and treated at length, then dynamos of various sorts are described. This chapter covers 118 pages. Chapter V. considers the various kinds of rheostats. Chapter VI., the subject of Power is treated and its application to the dental engine, lathe, mallet, fan, cataphoric apparatus, etc., is described. Chapter VII. takes up the subject of heat, showing the application of electricity to the gold annealer, electric oven, cautery, root-canal drier, warm air syringe, gutta-percha plugger, sterilizer, water heater, melting of platinum and gold, etc. In Chapter VIII. the subject of light is taken up and its use for mouth operations shown. Chapter IX. takes up the subject of electrolysis. Chapter X., Cataphoresis is treated at length. Chapter XI, gives a practical exposition of the X-Ray and its application in dentistry. Chapter XII. gives information for the establishment of an independent electrical plant for office or house use.

Many half-tone and other engravings throughout the book assist the reader in getting an exact idea of appearance and construction of various apparatus and appliances. The text is thoroughly reliable, for Dr. Custer has proven by actual experiment all that is advocated in the book, and, we might add, has been five years engaged in working up material for it.

At best, we can give the reader but an outline of the contents of this work, for it contains so much of practical value that it would require much more than our limited space to give an adequate description.

It is a book we can heartily recommend and every dentist should secure a copy and study it.

BOOKS RECEIVED.

ORAL PATHOLOGY AND PRACTICE, by W. C. Barrett, 2d edition, revised and enlarged. S. S. White Co., Pub., 1901.

OBITUARY.

DR. H. J. McKellops.

In the death of Dr. H. J. McKellops, on April 23rd, 1901, St. Louis has lost the last of her pioneers in the profession of dentistry.

Dr. McKellops began the practice of the profession when scarcely half a dozen dentists had offices in St. Louis. He had been for fifty-six years an active practitioner.

Dr. McKellops was born at Saline, N. Y., August 31st, 1823. In 1840 he came to St. Louis with his mother and sister, entering one of the public schools. Active and intelligent, he soon after obtained appointment as a messenger in the Missouri Legislature, using the money thus earned for tuition at the University of Missouri at Columbia, where he studied from 1842 to 1844. A course of book-keeping in Jones Commercial College followed this schooling, after which he found employment in the City Register's office, where opportunity presented for forming a wide circle of acquaintances, valuable afterwards when he entered the practice of dentistry.

He was drawn to the study of medicine in 1846 and 1847 at the old St. Louis Medical College.

He was drawn from medicine to the practice of dentistry, although he afterwards enjoyed the distinction of having delivered the first white child born in Montana. Natural ingenuity and a love of the mechanical arts soon made him an expert operator, and soon after opening his first office he commanded a practice of the highest class.

In 1855 the degree of D. D. S. was conferred on him by the Ohio College of Dental Surgery, in recognition of his skill and services to the profession. In Paris and London in 1864 he introduced the use of the mallet in dentistry before the Odontological Society of London. Dr. McKellops also introduced in St. Louis the use of continuous gum work, invented by Dr. John Allen, of New York. The doctor was a subscriber to all the dental periodicals and possessed the most extensive dental library in the world.

He is admitted to have done more than any other dentist in St Louis to educate the better class of the public up to an appreciation of the importance of the care of the teeth, the value of high class dentistry in contrast to low class, and an acquiescence in a proper remuneration for such services.

He was one of the organizers of the St. Louis Dental Society, founded on December 9th, 1856, and in 1879 served as its President. He helped organize also the Western Dental Association in 1860, was first President of the Missouri State Dental Association in 1865, served as President of thte American Dental Association in 1878, and in 1884 was elected President of the Southern Dental Association. He was also a constant attendant of the Mississippi Valley Association of Dental Surgeons.

In social life, no less than in his profession, Dr. McKellops was popular.

Dr. McKellops also had a military side to his career. He was Captain of the St. Louis Cadets, commissioned by General Edwards in 1842, and in 1845 became a Captain in the St. Louis Legion. In 1846 he commanded the Morgan Riflemen in the Legion's six months' service in the Mexican war, making the noted six months' expedition under Colonel Alton R. Easton, which included New Orleans, Brazos, Santiago, and up the Rio Grande to Matamoras. At the organization of the St. Louis National Guards, in the fifties, he was enrolled as a member and served in the riots of those days. Afterward as Assistant Adjutant General of the First Brigade in 1858, he marched across the State with the expedition under General D. M. Frost, to put down the invasion of the "Bushwhackers" and "Jayhawkers" who then were ravaging the western counties of Missouri.

The observations of the necessity of dentists in the army, no doubt prompted Dr. McKellops to introduce a resolution at a meeting of the Western Dental Society, held in Quincy, Ills., on July 21st, 1858, to the effect that a committee be appointed to memorialize Congress on the necessity of appointing dentists to be attached to the regular army. The resolution was adopted and a similar resolution was passed by the American Dental Convention in August the same year, being introduced by Dr. McKellops.

Dr. McKellops married Miss Annie Gower, of Tennessee, on April 4th, 1849. Eight children were born, five sons and three daughters.

> JOHN G. HARPER, BURTON L. THORPE, EDWARD H. ANGLE,

Committee.

Dr. W. H. Morgan.

Dr. W. H. Morgan died at his home in Nashville, Tenn., May 16, 1901, at the advanced age of eighty-four years. He was one of the pioneers in dentistry, graduating from the Baltimore Dental College in 1848. He formed a partnership with T. B. Hamlin, D. D. S., the only other graduate dentist in the State at that time, which continued for ten years.

Dr. Morgan attained a national reputation in his profession. Twice he was elected President of the American Dental Association, and he has also been President of the Central States, Mississippi Valley, Ohio College, Tennessee and Nashville Associations.

He was a member of the Board of Trustees of the Ohio Dental College from 1865 to 1879, and President of the Board when, in 1879, he was elected to the chair of clinical dentistry and dental pathology in Vanderbilt University. He then organized the dental department of Vanderbilt, and was its dean until forced to retire by advancing age. His contributions to dental literature were many, and are a recognized authority, and his labors have been a great factor in the elevation of the profession in America.

He was married in 1852 to Miss Sarah A. Noel, of Kentucky, and was the father of four children, Mrs. C. H. Noyes, of Warren, Pa., and Dr. Henry W. Morgan, Messrs. Jo B. Morgan and Garnett N. Morgan, of Nashville.

SOCIETY.

THE CHICAGO DENTAL SOCIETY OFFICERS.

President, A. B. Clark; First Vice-President, Geo. B. Perry; Second Vice-President, B. D. Wikoff; Secretary, Elgin Ma Whinney; Corresponding Secretary, C. S. Bigelow; Treasurer, E. R. Carpenter; Librarian, H. W. Sale; Member Board of Directors, J. G. Reid; Board of Censors, W. V. B. Ames, Chairman, C. N. Johnson, A. W. Harlan.

COMMENCEMENTS 1901.

Chicago College of Dental Surgery, 188 graduates; Ohio Medical University, dental department, 57; Ohio College of Dental Surgery, 69; Cincinnati College of Dental Surgery, 31; Louisville College of Dentistry, 59; University of Maryland, dental department, 71; Philadelphia Dental College, 121; Missouri Dental College, 47; Illinois School of Dentistry, 29; Pittsburg Dental College, 51; Baltimore College of Dental Surgery, 79; Northwestern University Dental School, 198.

VERMONT BOARD OF DENTAL EXAMINERS.

A meeting of the Vermont Board of Dental Examiners will be held at the Favilion Hotel, Montpelier, Wednesday, July 10th, 1901, at 2 o'clock p. m., for the examination of candidates to practice dentistry.

The examination will be in writing, and include anatomy, physiology, histology, bacteriology, chemistry, metallurgy, pathology, therapeutics, surgery, materia medica, anaesthesia, operative and prosthetic dentistry, together with an operation in the mouth.

Candidates must come prepared with instruments, rubber dam, and gold; also candidates will be required to take an impression, articulation and set up a set of artificial teeth.

Applications, together with the fee, ten dollars, must be filed with the secretary on or before July 1st.

George F. Cheney, Secretary. St. Johnsbury, Vt.

SOUTH DAKOTA BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota Board of Dental Examiners will be held at Vermillion, S. D., July 1st, 1901.

Applicants for examination should bring their operating tools and all materials necessary for filling with gold, etc., and such other work as the board may require.

G. W. Collins, Secretary.

RESOLUTIONS ON THE DEATH OF DR. H. J. McKELLOPS.

At a special meeting of the Society of Dental Science of St. Louis, held Monday evening, April 29, 1901, the following resolutions in memory of Dr. H. J. McKellops were unanimously adopted:

Whereas, In the death of Dr. H. J. McKellops the dental profession has sustained a great loss which will be felt throughout the length and breadth of two continents, and

Whereas, The members of the profession in St. Louis and especially of this Society, who best knew the depth of his friendship and felt the inspiration of his example, will mourn his loss most deeply, therefore, be it

Resolved, That the Society of Dental Science of St. Louis hereby expresses its full appreciation of the valuable services rendered our profession by Dr. McKellops during his long and actice life, and

Resolved, That in recognition of his distinguished services

and the great honor in which he held his profession, a suitable biographical memorial be prepared and framed, with his photograph, and hung in the rooms of this Society, and

Resolved. That a copy of these resolutions be sent to the family and to the dental journals and spread upon the minutes

of this Society.

EMMA EAMES CHASE,
HERMAN PRINZ,
B. L. LISCHER,
A. H. FULLER,
Committee

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

The Decker M. D. S. Abolished—A new law passed by the New York Legislature abolishes the power to gram the M. D. S., degree in that state and specifies that the degree of D. D. S. is the only one allowed to be granted graduates of dentistry.

Dr. S. B. Palmer Banqueted—The Fifth District Dental Society of New York tendered Dr. S. B. Palmer a complimentary dinner in commemoration of his fifty-two years of successful practice and scientific work. Over 50 dentists and friends were present.

TABLET TO THE MEMORY OF DR. GEORGE W. KEELY.—The Alumni Association of the Ohio College of Dental Surgery at its meeting. May 9th, unveiled a marble tablet to the memory of Dr. George W. Keely, trustee and first teacher of orthodontia in that institution.

REAPPOINTED.—Gov Nash has reappointed the members of the Board of Examiners of the State of Ohio for a second term. Unbeknown to the members of the board a petition was sent to the Governor signed by more than 400 of the most prominent dentists of the State asking him to reappoint the same board. It is a satisfaction to the members of the board to know that their work has been satisfactory.

POEMS OF THE FARM, BY DR. C. N. JOHNSON.—It gives us pleasure to acknowledge the receipt of this book of poems from our friend and brother. We had not realized before that Dr. Johnson did take to poetry so naturally as these poems indicate. They are well worthy of publication and

it would have been a pity to have lid them away from mankind. The poems of the farm are good, but the tender verses of childhood reveal a master hand and a feeling that comes straight from the heart. They would do credit to a Eugene Field. Here, for example, is one of them:

HOLDING BABY'S HANL.

Oft I'm sitting in the twilight.
Close beside a trundle bed,
Where a pillow soft and snowy
Bears a little curly head.

And I listen unto music Sweeter than the pipes of Pan; Sleepy rythms softly murmured— "Papa, hol-ey Baby's han'."

Nestling, with its rolls and dimples. Snugly in my monstrous palm, Little restless busybody, Finds at last a sheltered calm.

Thus ordained am I to pilot,
Without staff and without rod.
Such a royal little traveler
To the wondrous Land of Nod.

In the world's great strife and battle
I but make a sorry fight:
In the world's illumination
I but shed a feeble light.

Yet while void of force exalted Great enough to stir the land, I've a mission meek but mighty— I can hold a baby's hand.

For all this little book was printed by request of and for friends, we understand that it can be purchased by all who desire a copy. No one can buy our copy, however.

A Non-Advertising Denial Contract - The following declaration must be signed by all candidates for the beense to practice dentistry issued by the Royal College of Surgeons in Ireland:

"DECLARATION BY A LICENTIATE IN DENTAL SURGERY.

"I. A. B., hereby solemnly and sincerely declare that I am twenty one years of age and upward, and that if I shall be graved the License in Dental Surgery of the Royal College of Surgeons in Ireland, and solong as I hold the same. I will not seek to attract business by advertising, or by any other practice considered by the College to be unbecoming; and I agree

that such beense shall be canceled on its being proven to the satisfaction of the President and Council that I have done so."

A Valuable Booklet.—There is now in preparation a 64-page book, entitled "Facts and Figures, Medical and Otherwise, from the Census of 1900 and Other Reliable Sources." Fully one half of this volume (32 pages) is made up of full page colored lithographic maps and schematic diagrams, illustrating in a thoroughly clear, concise and graphic manner the most interesting and important subject matter of the century, so that the reader can comprehend and appreciate it at a glance. The manufacturers of Liquid Peptonoids, Borolyptol and Lactopeptine, who intend to present this handsome, artistic, instructive and unusually expensive souvenir to their friends in the medical and dental professions, will be pleased to receive and file requests for same.

New Dental Society.—The Mahoning Valley Dental Society was organized at a meeting held May 7th, in the office of Dr. F. H. Whitslar, of Youngstown, O. There were present dentists from Warren, Alliance, Canfield, Niles, Youngstown, and other points in the Mahoning Valley. The officers elected were as follows: Dr. F. H. Whitslar of Youngstown, president; Dr. David Gibbons of Warren, first vice-president; Dr. N. B. Acheson of Youngstown, second vice-president; Dr. Morgan of Youngstown, secretary; Dr. Dunn of Warren, treasurer.

The object of the organization if for mutual benefit. It was decided to hold two meetings every year. The next one will be held in Warren in October, and it will likely be accompanied by a banquet.

TIT FOR TAT-A FABLE BY AN OFFICE BOY.—One Day a Man cum into the Bosses offis, and says he, mister, I am A Stranger which cum a hundred an' 50 miles to Get some Teeth filled; can you do it right Away? the Boss he Thot a Minit and says he, No I'm afcard Not; I've got A all-Day appoint ment With judge perkinsis Wife. So the Man went of, and after a While the Boss he Got tired Waiting for miss perkins to cum, so he went and cleaned out the Seller, and Shuveled Cole all day. Late that Evenin Dr Jones cum in Smokin a 15 sent sigar, and he Slapt the Boss on the Shoulder, and say he, hello, sanders, you dun me A good turn When you Sent that Stranger over To my Offis this a. m. I Dun Forty-4 dolers an' 50c. worth Spot Cash fur him. The Boss looked Kind o' dazed fur a Minit, and after a Bit he remarked That he be Dam if he Ever had A bit of Luck. One day About a Weak later mis perkins cum sailing in Just as Me and the boss was tryin' to put a Clamp on a wisdum Tooth in a Sucker's mouth, and Says she, doctor, I'm Ol Reddy; Kin you Wait on me rite Away? I Seen he was Mad, but he Smild kind o' Pleasant, an' says He, cum in After diner an' Yu'll find The chair unoccupied. She Went of, Lookin' like she Thot that Wasn't the way She was Expectin' to be Treated. After diner she Cum in an' says kind o' commandin': Wher's The dentist? an' says I he's gone Fishin'. Gone Fishin'! says she turnin' red. Yes, says I; he'll be back 'bout crismus. Says she, you Tell him i've Gone to Another dentist wot's More puntchul. He'll never Do no more Work for Our family. So There!—Medical and Dental Journal.

OHIO DENTAL JOURNAL.

Vol. XXI.

JULY, 1901.

No. 7.

CONTRIBUTIONS.

DENTAL NEURASTHENIA.*

BY W. H. WHITSLAR, M. D., D. D. S., CLEVELAND, OHIO.

Neurasthenia is found more frequently among men than women, but in dental practice it seems more common among women. Single men and married women are most afflicted, and the age is between eighteen and fifty-five years.

It is occasionally found in children, but is often unrecognized among them. All persons predisposed to neurasthenia are affected by climate. Dryness of atmosphere predisposes to nervous excitability which is an expression of neurasthenia. Dryness causes an absorption of the natural fluids of the body, and, as dry air is a poor conductor of electricity the body becomes overcharged, thus the nervous system becomes more susceptible to internal or external excitation. Extremes of cold and heat cause nervousness.

Those who by hereditary or other influences have become neurotics and degenerates, or both, are most susceptible to loss of neuricity. Men and women of genius are susceptible to neurasthenia, because as a rule, they are deficient both as to mental

^{*}Abstract of paper read before the Tri-State Dental meeting, Indianapolis, June, 1901.

and physical capacity in some direction. Therefore, heredity plays its part in the transmission of those influences which weaken the natural resiliency of the nervous system.

From the numerous definitions I assume that neurasthenia is not exactly a disease in itself but an inco-ordinate action of neurility wherein it may be made the basis of many functional diseases. These definitions also indicate that two forces are concerned in neurasthenia. Let the one be called *neurosis*, q. v., and the other *psychosis*.

Neurasthenia affects the whole system. Two principal symptoms of neurasthenia are *nerve weakness* and *nerve irritability*.

In neurasthenia the special senses are not always affected, but may become exciting causes of the disorder, for instance, we perceive congenital defects of vision which later cause change of habits and the work of children.

Neurasthenia in children is often ascribed to "overwork" when it finds its etiology in astigmatism, muscular insufficiency, myopia, or hypermetropia.

The far-sighted (hypermetropic) child neglects books and cares for out-of-door sports; the near-sighted (myopic) child does not care to play out of doors and reads more than is usual or best for him, hence we notice children of the latter class acquiring sedentary habits and becoming nervous and irritable. They lose their power of co-ordination and neurasthenia is produced long before the cause is recognized. In this class of dental patients we find aggravated conditions which interfere with the proper performance of the care of the teeth. The same results may be said of those affected with muscular insufficiency and hypermetropia. An eminent occulist informed me that he observed more affected with neurasthenia of the above classes than those afflicted with myopia, because the latter class give up to their conditions more readily.

A large proportion of people use their brains in the struggle for existence. Brain cells are much like muscle, if over-worked, exhaustion is produced. C. F. Hodge, in the Journal of Morphology, 1892, gives some remarkable experiments which were

made upon animals before and after fatigue. It was found that the nucleus of the cell decreases in size and becomes irregular in outline. The protoplasm of the cell shrinks and spinal ganglia are vacuolated. The cell-capsule when present has a decrease in size of its nuclet. Lastly, nerve cells recover if allowed to rest for a sufficient time, the recovery being slow. From these conclusions we infer that from the loss of cell substance there must be much waste product circulating in the blood. The excessive material has a toxic action and thus paralyzes the system. In other words, there is in this a suggestion by the auto-intoxication of the tissues due to indigestion as related by Dr. Eugene Talbot, of Chicago, who states that Autointoxication from indigestion involves the whole nucous membrane of the alimentary canal, and especially the mouth, in which there is a change of the secretions and thickening of the mucous membrane. It is stated by Professor Dercum that there is a relation between gout and neurasthenia with the fact that "Neurasthenics" very often contain uric acid in great excess.

It is often reasonable to depose that the much discussed disease familiarly known as pyorrhoea alveolaries is without question an example of an over-worked, exhausted, peridental membrane whose tissues are intoxicated with the excessive material in the blood currents and intercellular tissue. It is a neurotrophia or impairment of the nutrition of the nerves. Exhaustion of the peridental membrane when it occurs is often confined to one or more teeth, and is the result first, of some irritation, and secondly, an attempt to relieve the uneasiness produced by the irritation with the pressure against the occluding With pressure comes exhaustion, "neurasthenia localis," which eventually terminates in the graver tissue destruction. From the presence in the blood of toxic substances as an outcome of profound neurasthenia, from whatever cause primarily, it is but just to argue that all tissues of the mouth which are subject to blood currents may suffer from the toxic condition. The cacochymic state undoubtedly produces neurasthenic conditions surrounding the teeth as well as the recrementitious fluids of the mouth. Further, it is my thought, that stigmatism of the enamel as shown by the so-called atropied spots and pits are the relics of trophoneurosis, an impairment of nutrition which may be due to exhaustion.

"Anæsthesia does not exist in neurasthenia" (Dercum), hence we may expect undue sensitivity of the teeth and tissues of the mouth. The dental pulp readily responds to external stimulation and wrathfully expresses its anger in painful elements. As neurasthenia is not a constructive disease but a symptom of exhausted energies, the pulp of the tooth, if subjected to continued irritation, dies without the fortifications of secondary dentine and pulp nodules are formed. The pulp is easily irritated in neurasthenics and exquisite sensitivity of the dentine is often noticed, many times to the regret of the dentist. Bridge work dependent upon distant anchorages causes strain of the peridental membranes, producing exhaustion of the cellular elements and eventually their destruction. With this the alveolar processes give way, and, being no longer supported in its place the bridge is lost. Worriment concerning dental tissues conduces to neurasthenic conditions.

Neurasthenia is one of the symptoms of decay, or expressed otherwise, decay of teeth is the result of those conditions which predispose to decay and which are concerned in the biochemism of the tissues. Ranney, the neurologist, states, that, "Premature decay of the teeth has been brought forward as one of the most striking evidences of the steady increase of the constitutional impairment which has followed our present methods of living." Such is this condition that neurologists, generally. recognize decay of the teeth as a sign of depression of the nervous system. Dr. Michaels of Paris in his paper read before the International Dental Congress in 1900, refers to saliva as an indicator of the decay of the teeth, also of the diathetic and organoleptic conditions of the body. The essay declares that the tissues and secretions depend upon the blood plasma; a dvscrasic condition modifies the forces of the economy and produces local or general manifestations taking place alternately and successionally. Abnormal vital processes end in two ways, hypoacidity and hyperacidity.

In hypoacidity there is a vital over activity resulting in the contagious diathesis as in tuberculosis, syphilis, etc. In consequence of this state it is evident that nerve exhaustion is easily acquired. Dr. Michaels' experiments show, too, that dental decay is more prevalent in this state; hypoacidity, and an indicator of the same is the relative proportion of ammonia being greater in the saliva than the sulpho-cyanides. A very important item in the essay was that the activity of dental decay is modified by the diathetic period.

Now, in hyperacidity we find a decrease of vital activity, but an increase of acidity of the blood, and an accumulation of acid products which in their turn poison the system.

The conclusion to be derived from a study of these conditions is that there may come a neurasthenic state either from hypoacidity (over-activity) or hyperacidity in which waste products accumulate; that biochemistry of tissues is a part of life's processes, and diseased conditions of every tissue are dependent upon them.

Treatment: In the treatment of neurasthenia there are two elements to consider, the patient, and the dentist himself. In both we sometimes find the same conditions, i. e., worry, fear, exhaustion from temperature, deficient respiration, and psychic disturbances.

The dentist is exhausted by continued physical labor and anxiety for the care of those whose nervous systems are exalted and intractable by common measures. He is compelled to reduce psychic disturbances by putting himself *en rapport* with the patient. This signifies a depletion of his own neurodynamia or nervous force. The first principle of this treatment is to secure the *passivity* of the patient. Rest is the *sine qua non* treatment for neurasthenia. Upon this fact Dr. Weir Mitchell based his famous treatment of neurasthenia known as the "Rest Cure." In the performance of dental operations there is no opportunity to follow in detail the rest cure for the lack of time. We first produce, as above stated, passivity, then comes *faith*. With a basis of passive or restful thoughts and the concurrence of faith or confidence in the dentist he (the dentist)

now is able to suggest orally, or through the subjective mind, his control of the sensations of the body.

If there is any condition that requires care it is at this period, for many cases of neurasthenia drag out for years and the patient eventually dies of some intercurrent disease. As shock is often one of the causes of this disorder all subsequent operations are under restraint and should be in many cases only temporizing. It is advisable to prepare the patient for an operation by suggesting a period of rest previous to the visit—a good night's rest, by the use of medicaments as a sedative or stimulant, as the case requires is frequently desirable. Strychnia, bromide of potassium, antipyrine, morphine (used rarely), are some of the most reliable remedies. Hot water as a drink before and after operations is one of the most valuable remedies, and its value may be enhanced by the use of some of the milk foods of which we have familiar knowledge. Good food is at all times essential to the well being of any individual, and it has double value in neurasthenia. Good sleep, good food are health restorers.

In local neurasthenia of parts of the body, for such may occur, we believe, the conditions of the part suggest the treatment. It must be remembered that there are different phases of neurasthenia and a specific treatment is not known.

Finally, let it be said, that this paper does not exhaust the subject of neurasthenia, and it is hoped that attention drawn to it herein may result in further investigation.

CRITICAL PERIODS IN THE HISTORY OF THE HUMAN TEETH.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

A close study of the history of the teeth of individuals will reveal a somewhat marked variation in the tendency to decay at different periods of life, and this variation, though not uni-

^{*}Abstract of paper read before 'The Tri-State Dental Meeting, Indianapolis, June, 1901.

versal nor of constant uniformity in its manifestations, is yet of sufficient regularity and sufficient significance to merit a most careful consideration on the part of dentists.

To-day we think we know the exciting cause of dental caries, but of the influences which modify its action we are not so certain. In fact, it may well be affirmed that when it comes to this question of influence, or, in other words, when it comes to the conditions in the mouth which make for or against the tendency to caries, we are almost wholly in the dark.

The cause of caries, as demonstrated by Miller, is an acid formed as the result of the propagation, development and death of micro-organisms in the mouth, but the reasons why we find the teeth of some individuals extensively attacked by caries, and others practically free from it, have never been sufficiently explained—particularly in view of the fact that we may find microorganisms in all mouths. Nor do we know why it is that in the same individual there are times when the carious process is exceedingly active, and others when it is almost wholly in abeyance.

Teeth do not grow intermittently hard and soft, nor is there sufficient variation in the structure of the teeth of different individuals to account for the great variation in the tendency to caries. It is then a question of environment more than one of structure, and the conditions surrounding the teeth must be held accountable rather than the teeth themselves.

In view of the case it becomes necessary for us to study carefully the conditions in the mouth, the character of the fluids of the mouth, and to learn, if we may, the particular elements in these fluids which tend to advance or retard the carious process. It is along this line that Michaels seems to have directed his efforts, and in the condensed report of his paper given in the *Dental Cosmos*, of December, 1900, we find suggestive references to the significance of saliva as an index to diathesis. It is to be hoped that this study will be carried further into the field of caries of the teeth, for, as the report of his paper says:

"The conclusion to be deduced from the foregoing is that as long as we have not discovered the cause of morbid states, and as long as we have not made a more serious study of the essential factors of biochemistry and of the relations of diathesis with the salivary excretion, we will not be in a position to explain in a precise way the morphological differences of dental caries."

But the moment we recognize the fact that the carious process is influenced more by the conditions surrounding the teeth than by the character of the tooth structure itself, we are placed in a more intelligent relation to the matter, and are in a better position to study the factors which bring about the variations which we see in every-day practice.

It is clearly demonstrated to-day that the attempt to produce mere mechanical cleanliness of the mouth is not sufficient.

It would seem patent that if we are to accomplish anything permanent in this direction, we must so change the conditions of the mouth that the micro-organism of dental decay cannot exist therein. To attempt this may seem Utopian, and we are not unmindful of the difficulty of the problem, but we are convinced that this is the only certain way out of the dilemma.

When we speak of changing the conditions, we refer to something deeper and more subtle than a mere chemical reaction. There are agencies at work affecting the life forces of the human economy, the nature of which we to-day know comparatively little. We may recognize an idiosyncrasy, but we are not capable of defining the causes which lead up to it. For instance, there are individuals in whose mouths caries is seldem or never seen, while there are others with teeth as well developed, and where even greater care is taken, who lose their teeth bit by bit, despite the most persistent effort to save them. The logical conclusion seems to be that in the one case there is a subtle condition present in the mouth, which militates against the active agency of the micro-organism, while in the other the conditions are favorable to its development.

At the present time we are wholly unable to distinguish between these two conditions—we can see only the results. But the time may come—and we trust it will—when we are able to recognize these conditions and treat the patient accordingly.

The idea of vaccination for the prevention of dental caries would offer a most delightful topic for the newspaper humorist of to-day, and yet who knows what the future may develop? One thing seems certain—we must learn more than we now know regarding the conditions that are favorable or otherwise to the propagation of the micro-organism of caries, and we must also learn how to modify these conditions before we can hope to successfully prevent decay of the teeth.

This disease is essentially a disease of youth, in the sense, at least, that it makes its most rapid advance while the patient is yet young. If the disease can be held in check till the patient is twenty-five years old, the greatest danger is past, so far as the loss of the teeth by caries is concerned. The period of youth, then, is a critical period, and while the age limit cannot be set with accuracy, it may be said that in susceptible patients the teeth should have constant supervision by the dentist from the time the deciduous teeth show indications of caries. The desirability of keeping the deciduous teeth as free as may be from decay has frequently received emphasis from writers on dental subjects, and does not require extended repetition here, except to mention two cardinal points which have a direct bearing on the early establishment of immunity.

To keep the teeth and the surrounding tissues in a normal condition, it is necessary to maintain the full functional activity of the parts, and if dental caries is to be prevented or controlled, it is desirable that the teeth should be kept sufficiently comfortable to admit of adequate functional use. The part that mastication plays in the prevention of caries, aside from the general health of the patient through digestive influences, and the stimulation of the surrounding tissues through healthy exercise, relates to the mechanical cleansing of the surfaces of the teeth by the friction of food in passing over them. If all of the surfaces were so situated as to be wiped clean by mastication, and if mastication were performed to the full limit, we should seldom see decay of the teeth.

The other point connected with the care of the deciduous teeth relates to the effect which neglected caries has upon the

prolongation of susceptibility. In other words, it seems to be a fact that in a mouth where it would be the natural order of things in the course of events for immunity to take place at or near a given age, it is found that the period of immunity is delayed, and the period of susceptibility prolonged by the presence of neglected cavities in that mouth. Like begets like, and caries begets caries.

It is not always possible to control caries in the deciduous teeth, on account of limitations both in patient and operator, but the dentist of to-day should approach this question in a different relation from those in the past, and with the added incentive of thereby establishing in the mouth of his patient an early immunity from the ravages of decay. Suppress caries as if it were a deadly and contagious disease, of which nature it in fact seems to manifest certain symptoms when it attacks the teeth of children.

In line with this treatment preventive measures should be taken in guarding the permanent teeth, while they are erupting in those mouths where a pronounced tendency to decay is manifest. The first permanent molar should in all such cases be the object of especial care, on account of its early eruption, and its consequent liability to decay, and also because it is of all others the most important tooth in the mouth. The moment such a tooth shows through the gum, the occlusal surface should be protected from decay by carefully cleansing it with alcohol, and drying out the sulci and fissures, and forcing into them some oxyphosphate of zinc. This will tide the tooth over a very critical period in those cases where the tendency to caries is great.

The most critical period so far as decay of the teeth is concerned may be said to be up to the twentieth year, though many cases exhibit progressive caries past this age, and very many others take on a condition of practical immunity earlier than this.

There are other critical periods besides that of youth, and even when we have once established a condition of practical immunity, we may have a return to susceptibility. For instance, an illness may change a mouth from an immune to a

susceptible one, and we sometimes find a variation in the tendency to decay without being able in any way to account for it. One of the most potent factors in this regard seems to be the influence of climate, or the change from one country to another. Foreigners coming from Europe to reside in America often manifest an increased tendency to caries, and we have it on the very best of authority that the factory girls in some of our eastern cities, coming recently from foreign countries, particularly those from Norway and Sweden, show the most astonishing development in this connection. It is recorded that girls who come here with teeth practically free from caries are frequently known to be attacked so vigorously by this disease as to lose all their teeth in a few years. As has already been stated, we need more light on the question as to what particular element or elements it is in the mouth which renders it immune at one time and susceptible another.

One other critical period must be mentioned, though it is of less import than those already referred to. When teeth are lost in advancing age, it is usually the result of failure of the surrounding tissues, so that the teeth loosen and fall out for lack of support, but in some instances there develops in the mouths of elderly people a marked tendency to decay, in teeth which have previously been comparatively free from it. The character of this decay is usually different from that which attacks teeth earlier in life, and is the result of a recession of the gums, whereby the neck and root of the tooth is exposed in such a way that the tooth is girdled with decay at a point root-wise of the enamel. This form of decay is very disastrous, and more difficult to control than the ordinary forms, where the penetration is deeper at a given point.

The practical lesson to be learned from a study of this entire question of periodical immunity and susceptibility lies in the hope it gives us of eventually combatting the disease of dental caries, even in some of the most desperate cases. If we have the ultimate welfare of our patients fully at heart, we will not carelessly abandon the teeth of any patient who expresses a desire to have them saved, and with those patients who are

lukewarm on the subject or who are easily discouraged when the carious process seems persistent, it is our duty to so inform them in regard to the history of dental caries as it relates to the expectancy of an approaching immunity, that they may thereby take heart and co-operate with the dentist, to the end that the greatest number of the natural teeth may be saved. The fact is, that it is the rarest exception possible where it ever becomes necessary for an individual to lose a tooth by decay if dentist and patient do their duty. And if this be true, have we not as a profession much to answer for? If we are I sing teeth by caries to-day, it is either because we are incompetent ourselves, or else because we have not educated our patients up to the point where they will co-operate with us to their own ultimate good.

DENTAL NAPKINS—OLD AND NEW.

BY B. G. SIMMONS, D. D. S.

Judging from what the writer reads and hears said upon the subject, there is a very perceptible and decided movement with dentists throughout the country towards an increased use of the dental napkin. This is probably due to several causes, one being the now frequent operations in crown and bridge work where it is to a great extent a necessity. Another is the fact that it is realized that the napkin or cotton rolls properly applied or the two combined, are all that is required in the way of a dam for the very best of work in plastic fillings, and even the simpler of gold operations. This being the case, there is a great saving of time in their use, and frequently much annovance to both operator and patient is avoided. The writer began the study of dentistry some twenty-five years ago in Rochester, N. Y., in an office where scarcely any filling material but gold was used, and that gold very largely soft foil in the form of cylinders. Now, while realizing fully how great has been the advancement in dentistry since that time and how much the man of that day would have to learn were he to step suddenly from that time into the present, vet we

must certainly give him full credit for one line of work in which he excelled, and that was an almost wizard-like manipulation of soft foil, which to-day, more's the pity, seems to be fast becoming a lost art. Those deft operators with soft-foil cylinders rarely required anything further than the napkin in keeping their work dry for the few minutes that it took them to insert a filling even of considerable size. Many is the gold filling and fairly large ones, too, that I have seen put in in twenty minutes, and as I am doing good masticating to-day on some of those same "twenty-minute fillings," put in twenty years ago, the work may be said to have been fairly successful. If some of our "three-hour gold fillings" of to-day would last a year for every minute that it takes to put them in, how very permanent they would be.

But to return to the subject of napkins—still another factor in bringing about the present increased use of napkins is the advent of the aseptic napkin. In all that has been written of late upon this subject and in the recent discussions in various societies on new forms and more frequent application of the napkin, the verdict of all is that the dental napkin of to-day must be an aseptic napkin. A napkin that is surgically clean and is used but once and destroyed. We recognized long ago, before we knew of disease germs as we now know them, that there were some unpleasant features and suggestions about the old style napkins that were sent home regularly each week to be washed. The writer remembers well giving directions at different times that these napkins were never to be put in with other things, and I have no doubt that I did so with the motive of being more cleanly with the napkins, yet I do know that there was a feeling mixed with it that I did not want by any chance through carelessness of the laundress to have table linen or wearing apparel put in with those napkins, quite as much on account of being particular about the cleanliness of the former as of the latter. Yet I was willing to use those same napkins again in the mouth of some person who was quite as fastidious as I, and with whom I should have been quite as particular as with myself. I say I was willing to do so because I didn't know that there was any other way to do. I am not willing now, and do not do so. To put one's self in the patient's place, we all know that quite frequently we find mouths, even in the very best class of practice, that after we have removed a napkin loaded with saliva from that mouth, that were we to have the washing of that particular napkin preparatory to having it used in our own mouth, that we would be pretty particular how it was washed. We would give it a rather longer boiling, more soap and several more rinsings than the laundress would be likely to give it, and even then the remembrance of its former condition would be unpleasant. This would be the case in spite of a very careful washing and unquestionably a large proportion of all dental napkins are washed very carelessly instead of carefully. Not carefully enough even for ordinary precautions pertaining to health. Their uncleanliness is not a kind of dirt that shows, and in the hands of an untrustworthy or careless person, a simple rinsing-out, and ironing, makes them presentable and is much more quickly done and no one the wiser for it, yet the results may be really dangerous. It is known to-day beyond all doubt that a substance like cloth should not be used in mouth after mouth. Its ability for harboring disease germs within its meshes and the chances of its so doing are far too great. It is a vastly different proposition from that of cleansing a substance like steel. The proper sterilization of instruments is a very simple matter in several ways, and it is presumed that it is done by every careful dentist after finishing work for each patient.

In advocating the use of aseptic dental napkins I mean a napkin made expressly for this purpose, of goods of the proper absorbency, and free from sizing. Capacity for absorbency rather than rapidity of absorbency is what is required. A stiff filled cloth may act as a conductor of moisture rather than a dam against it, or it may be entirely lacking in absorbency which is equally objectionable. They should be handled by surgical methods in the same way that dressings for the general surgeon are handled and should go through a final sterilization after they are packed in the box. Some may say this is going to greater extremes than is necessary, but I think not.

To me there is a feeling of satisfaction in using a napkin of that description. I know it is clean and do not hesitate to mention the fact if occasion calls for it. When we take into consideration the fact that we can buy aseptic dental napkins, meeting all the above requirements, bearing the "aseptic seal" of the manufacturers of surgical dressings, for actually less expense than we can wash the old style napkin, and add to this their convenience in always being ready to use, and no picking up for the laundry, there is no further argument really necessary to convince us that where the use of a dental napkin is indicated, it should be an aseptic napkin. The appearance of the napkins convinced me the first time I saw them.

DR. GEO. W. KEELY.

[An address delivered May 9th, 1901, by C. M. Wright, A. M., D. D. S., before the Alumni Association of the Ohio College of Dental Surgery on the occasion of the unveiling of a tablet to the memory of Dr. G. W. Keely.]

"If we could sometimes separate ourselves from ourselves—stand aside—and behold our environment, our own town, our intimate friends of the past and the present, as outsiders behold them; we might find it not only interesting but instructive." But this is a difficult thing to do; because of the struggle each of us has in the crowd of daily and hourly events, in which we are plunged. Because of the hurry and bustle that whirls around us like living panoramas of scenes which we feel bound to notice during every waking hour. Pleasures, worries, griefs, agitate us for the moment and whirl past, and other pleasures, worries, and griefs attract our earnest attention; and we have little time for meditative observations of the scenes that have been swept away by the current, and only remain with us as memories.

To-day, however, the Alumni of this Ohio College of Dental Surgery, will stop for a few moments to erect a tablet to the memory of one of the distinguished members of our society and of our profession, George W. Keely, alumnus, trus-

tee and teacher in his day, and always a warm and earnest friend of this institution.

We will place this side by side with the marble tablets,—slight memorials of two confrères—who, with him have left impresses more enduring than the tablets which we place in the wall of this hall. I refer to Dr. Jas. Taylor and Dr. Geo. Watt.

Taylor, Watt, Keely! Personalities to all older men, names only to others,—but names which the history of our beloved profession will ever surround with wreaths of immortelles.

The seeds which these men planted have grown up into mighty trees, with branches spreading out over the entire civilized world. They were among the first "dental teachers," when the number was confined to two or three American colleges. Now the dental teacher can be found in over thirty American colleges, and in nearly every country in the world, European and Oriental. And these were men of such character that we, to-day, are proud to be able to honor them even in this modest way.

George W. Keely was born in Oxford, Ohio, and made that quaint college town with its scholastic atmosphere, its sacred academic groves and cultured traditions, his home all his life; and died there honored by the entire community.

There he practiced his profession with such distinction and devotion to the welfare of his patients that the township had a feeling of personal ownership that made them proud to point to him as one of the distinguishing features of the place. Then he was so good a man that rich and poor alike looked to him for counsel, comfort and advice in trouble and sickness, and found him the friend indeed.

He seemed in all things the humanist—though, perhaps, too regardless of his own interests. He was so noted a citizen that the bank and business houses of the entire town closed their doors the day of his funeral.

He was of a type far removed from the commercialism that has crept into our profession and shown even by many who sit in high places in the reserved seats of the aristocratic circle. In all his ways he was the gentleman and the professional man,—or, to be more exact, for these terms are synonymous,—he was a true professional man, and this implies the other in its highest and broadest meaning.

Dr. Keely sent out a number of students from his office,—as was the custom in those days,—many of them being under obligation to graduate at this college; and I will venture to say that each and every one of his students holds the opinion, firmly fixed in his mind, that the influences spread about him during his student days by his friend and preceptor, Dr. Keely, have been potent forces in times of trial and temptation in his professional life ever since. Influences for good, for ethical and high toned principles toward his professional brethren, and the profession as a profession, a desire to foster honor, faith and charity toward all men! Verily, to be able to exert and influence for good is the highest privilege of duty in man!

Dr. Keely had the artistic temperment and the artistic sense. He was a lover of nature, and a patron and friend of him who showed taste or talent in artistic lines. The young artist looked to Keely for encouragement and did not look in vain.

On a knoll, overlooking the valley of a winding stream, in the beautiful little cemetery where the mortal part of our friend lies, and very near to his grave, is an immense boulder with the simple inscription cut into its rough surface, "Charles Barrows, Artist and Soldier, died 1863." To place this huge boulder on the brow of the hill in Dr. Keely's lot must have been a tremendous undertaking with the help attainable in a small town; but Dr. Keely sought the boulder, whose bed was in the creek some miles away, because of an expressed admiration for it by the young artist, Charles Barrows, and with a team of eight horses and what men he could hire, and with his own hands to the work, he succeeded in transferring it to the cemetery and placing it as a monument over his dead artist friend. How much less are we doing for Dr. Keely to-day? This little incident gives a picture of the sentiment and character of George Keely-and it lives in the hearts of all who know about it.

In the profession his especial distinction lay in the correction of the irregularities of the teeth; and the devotion which he gave to his cases, the enthusiasm he displayed in his work, was refreshing, and a stimulus to all who came in contact with him.

The valuable "Keely Collection," which was presented to this College by the son of our beloved friend, shows only a part of the great work done by Keely in this important branch of surgery.

A village dentist! With the birds singing in the boughs just outside his office windows; the public square opposite, with its grass and trees forming a cool and inviting resting place, and adding wonderfully to the attractive beauty of the miniature city. Every tree in the square had been planted under the direction and through the influence of this village dentist—as citizen and councilman.

The farmer's horses, tied in the shade of the square, while the honest yeoman and his good wife, or the blooming country lassies are visiting the shops about the square; the clusters of capped and gowned students sauntering about in the streets! These are the pictures that come to me when I think of Dr. Keely's office. The whole scene being one of peace and rest and quiet; the antithesis of a scene from the window of a metropolitan dentist! But from this village, and this village dentist's surgery radiated an influence that surrounds us to-day, years after the death of the man who spent his life in that quiet spot.

I could enlarge upon the thoughts that I have simply noted, and I could relate incident after incident that came within my knowledge of Dr. Keely during the time of studentship, and years of friendship afterwards; and these incidents would all be of one character—that is, they would show devotion and love of the good he could accomplish in its practice; an unselfishness that was too Tolstoian, possibly, for modern Christianity; an honor sensitive and never failing; a heart true to friend, and kind even to an enemy; a manner open and cheerful and friendly—but, I am trying to separate myself from myself and look on, as an outsider, on this man with this

character; and even as an outsider I must offer to his life and character and memory my sincere admiration.

That this good man's spirit is with us in memory is true, and that it still lives in the unknown—let us accept the reasoning of Cato:

"It must be so. Plato, thou reasoned well:
Else whence this pleasing hope, this fond desire,
This longing after immortality?
Or, why shrinks the Soul
Back on herself and startles at destruction?
'Tis the divinity that stirs within us.
'Tis heaven itself that points out an hereafter
And intimates Eternity to man."

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

STERILIZATION OF INSTRUMENTS.*

BY I. TH. ROUDNITZSK.

Among the sharp instruments used by the dentist are various kinds of knives, excavators, drills, etc. In order to keep them sharp as long as possible we should proceed as follows in sterilizing: They are to be carefully washed with soap and water and then wiped with alcohol, ether and chloroform.

Dull instruments can be sterilized by boiling; among these are the various kinds of forceps, levers, elevators, sounds, pluggers, spatulas, spoons, files, thumb forceps, etc.

Instruments made of corundum, carborundum, and similar materials cannot be boiled; and yet, owing to their rough surfaces, they need sterilizing. Here we have to be content with chemical disinfection: After careful washing with soap and water and scrubbing with a brush they are to be immersed for a considerable time in trustworthy antiseptic solutions.

^{*}Extract from translation in Dental Brief.

Dr. Rau (*Deutsche Zahnarzt*) advises that instead of carbolic acid or bichlorid, a solution of 1 to 2000 cyanid of mercury be used in their disinfection,—a substance which is six times stronger than solutions of bichlorid. In any case it would be interesting to try whether it is not possible to keep these instruments permanently in some antiseptic solution. Before using they should be rinsed in water in order to remove the bichlorid, etc.

Syringes used for injections into the gums demand scrupulous cleanliness and care. Syringes that can be sterilized by boiling should be preferred, and therefore those that have metallic mountings with asbestos or glass pistons should be used. The trouble in boiling them is that they frequently crack. Hence we welcome any attempts to render the syringes aseptic by some other method, and the experiments of that indefatigable worker, Schimmelbusch, are of the highest practical interest. He infected syringes with pus and tried to sterilize them without heat. He found that simple flushing with sterilized water does not sterilize them, but that passing boiling water through the syringe five times will accomplish the desired result. Next to boiling water, the best result was obtained with washing with absolute alcohol, but three per cent. carbolic acid acted very poorly.

It follows from these experiments that, provided our syringes have not been infected with purulent matter, we can safely inject sterile solutions into the gums, under the skin, etc., after having washed them with boiling water. It is self-evident that for exploratory punctures we should have a separate syringe.†

Hypodermatic needles should be sterilized by boiling; those made of platinum-iridium can be heated to a red heat. The needles must be kept dry, so as to prevent them from rusting. Nicaise recommends that they should be kept in

[†]Note by the editor of the Zoubovratchebny Viestnik. Syringes with glass pistons must be dried after using, for only then can the piston be introduced, and if it be left to dry in the syringe the piston may firmly adhere to the barrel.

ninety per cent. alcohol, naphthol, and chloroform (betanaphthol, 5.0; alcohol, ninety per cent., to make 1000 c.c.). He assures us that in this solution steel instruments do not rust and do not lose their temper and their sterility. The experiments of Maréchal, however, showed that steel instruments will become oxidized although they have been kept in ninety-five per cent. alcohol. Hence even this question has not yet been decided, and it is better to keep the needles dry in the old way. When sterilizing them it is not necessary to boil them longer than one or two minutes, because otherwise they lose their temper.

A CASE OF NECROSIS.*

BY CHAS. NEVITTE GIBBONS, D. D. S., NEW ORLEANS. LA.

Necrosis of the jaw is more or less common, due to such causes as scurvy, syphilis, certain eruptive fevers, as measles, scarlatina, variolas, inflammation of the periosteum and peridental membranes, mercurilization in persons who work in glass and match factories and many other causes. The most common cause is probably large doses of mercury, less frequently now, however, as mercury is used less than formerly, and in smaller doses.

No case, as far as I have been able to learn, has been reported as due to abscess of a deciduous tooth only. The case which I report to you is of more or less interest from its rarity, being due to an abscess of a deciduous tooth. The history of the case is, briefly, as follows: Patient, a child of five years; sex, male; previous health, good; no predisposing cause such as syphilis or mercurial ptyalism.

Previous to being presented to me, the case had been treated by the family physician with antiseptic mouth-washes, with little or no benefit. On being consulted, I found, on examination, necrosis extending from the deciduous cuspid to the unerupted third molar.

^{*}From Dental Clippings.

There being no permanent teeth erupted, with the exception of the sixth-year-molar, which was partially erupted. In the removal of the sequestrum which I present, the unerupted permanent teeth were removed, including the first and second permanent molars; the third molar I deemed advisable to leave in situ.

Treatment consisted in thorough curetting of both ends of the bone and packing with gauze; this was removed on the third day, and patient discharged from hospital on sixth day.

BAD RESULTS FROM CHLORETONE.*

BY DR. F. B. CLEMMER, MORGAN PARK, ILL.

Some time ago I was prevailed upon to try the new local anæsthetic put up by Parke, Davis & Co., called chloretone.

I read all the literature I could find on the subject, and accepting the statements concerning its safety and thorough efficiency. I had the druggist prepare the ethereal solution for topical application and the aqueous solution for injection. I have but recently started its use, and have more recently discarded it. Three patients have reported to me for whom I had extracted teeth, and each one had the same kind of disfigurement and the same tale of woe.

In the first case the injection of the preparation caused extreme pain, much more so than cocaine. So far as the obtunding effect is concerned, I was well pleased, and the patients remarked at the absence of pain.

I felt grateful, of course, that I had procured a local anæsthetic that was safer than cocaine and still had its effect.

My peace of mind was of short duration, for the next day the lady came to my office, her face one-sided, and suffering a great deal. Upon an examination, I found the tissues sloughing over a considerable area, and very highly inflamed. She had passed a night of intense agony, being unable to sleep. The other two patients passed through the same glorious (?) ex-

^{*}From Items of Interest.

perience. The fault cannot be laid to unclean instruments, for all were made antiseptic before using.

I have been using heretofore Wilson's preparation of cocaine, but never had such an experience.

I do not wish to condemn a good thing; neither do I desire to use that which will cause me to ask for police protection.

The druggist prepared the solutions according to the printed instructions, so the blame cannot be laid there.

AMALGAM JOINT IN DIFFICULT CASE OF CROWNING.*

BY C. E. BELLCHAMBER, D. M. D., EFFINGHAM, ILL.

A lady presented herself at my office to have an artificial crown inserted. The tooth was an upper central incisor. The natural tooth crown had decayed and broken off, leaving the root end of tooth in a rough state. The lady objected to any procedure except crowning.

Upon investigating the root of tooth, I found it to be fairly solid in the jaw. The pulp being still alive, I removed the same by use of cocaine and pressure. I found that there was a great deal of softened dentine. Cutting this away until a solid surface was reached, it caused the root surface to be very uneven.

The patient, having lost the right lateral incisor, had been wearing an upper partial denture for years, and the pressure upon the gum tissue from the artificial tooth had caused the gum to recede so that the distal surface of the tooth was an eighth of an inch shorter than that of the mesial surface, after the mesial surface was ground down sufficiently.

Preparing the canal for the reception of the pin of the crown, I selected a Logan crown. After articulating the abutting surfaces as well as case permitted, there was still a space between the crown and root in the distal surface of about one-sixteenth of an inch. Upon the face of the root, com-

^{*}From Items of Interest.

mencing at the mesial surface, I extended an undercut in the dentine conforming to the shape of the tooth until it almost formed a circle, ending near the distal surface. I then fitted a wooden plug in root canal and proceeded to pack amalgam around plug and in the undercut, building up the end of tooth to the required form extending only on the mesial half of the tooth. After allowing amalgam to set, I removed the wooden plug from the canal and adjusted crown to see if it articulated properly. Then removing crown, I mixed my cement and filled canal first, then placed small quantity around pin of crown and placed the crown in position. After the cement had set sufficiently, I removed the surplus, cutting it all away until I reached the amalgam previously inserted. Mixing some quick-setting amalgam, I inserted it under the crown until it came in contact with the first amalgam in the undercut, packing in firmly to place until the vacant space between the end of root and crown was entirely built out. Allowing amalgam to harden, it was polished even with the tooth, thus giving a firm abutment for crown to rest on.

TREATMENT AND METHOD OF STERILIZATION TO ARREST PYORRHEA ALVEOLARIS.*

BY A. C. HART, SAN FRANCISCO, CAL.

The Puncture Process.—Before removing the tartar the surfaces of the teeth and gums are sprayed with a solution containing equal parts of pyrozone three per cent. medicinal, and hydronaphthol one-quarter per cent. The soft tissues are anesthetized, then punctured, using a very small cataract knife and the spoon-shaped excavator, Darby and Perry set, Nos. 19 and 20, that have had the sides of the spoon removed, giving them a spear-pointed appearance. This depletes them with little loss of tissue, reduces the inflammation, making easier the work of scaling the tartar from the root and the sterilization of the cementum and surrounding tissues.

^{*}Extract from article in Dental Cosmos.

This puncture process is thoroughly done, and the object is to destroy the pocket and force the tissues to lie against the sides of the roots so that union can take place. It makes the removal of the tartar very much easier, as the scaling instrument can be passed directly through the soft tissues and dislodge the tartar. The gums are sprayed with the pyrozonehydronaphthol solution ten or twelve times during a halfhour sitting, using compressed air under thirty-five pounds pressure. This forces the wash for a considerable distance into the soft tissues and the cementum. Every particle of the tartar must be removed if a cure is to be accomplished. In the puncture process the aim is not to cut the gum tissue into strips, but to punch it full of holes. It relieves the congested condition of the tissues, and washes away quantities of bacteria that may have penetrated the surface laver or even the deeper layers of cells of the epithelium. The gums are punctured before attempting the removal of the cementum; in fact, this puncture process is repeated whenever any scaling or scraping of the root is attempted.

Use of the Compound Tincture of Benzoin.—At the end of each treatment dry the soft tissues and paint with three or more coats of the compound tincture of benzoin. This protects the soft tissues from infection, a measure that in the successful treatment of pyorrhea alveolaris is very important. The tincture of benzoin compound will adhere to the soft tissues twelve or more hours. Caution the patient not to brush the teeth until the next day, but to depend upon frequent use of the mouth-wash in cleansing the teeth and soft tissues.

Removal of Tartar and Cementum.—When removing the tartar endeavor to leave the surface of the cementum smooth. Should there still be a discharge of pus in a week after the first treatment, and consequently no union of the gum tissues with the cementum, and you are sure all the tartar has been removed and that the soft tissues are not to blame, remove a portion of the cementum, and I have found the enamel cleavers of the S. S. White Dental Manufacturing Co. to be

excellent instruments for this purpose. I have ground them down so that they are somewhat smaller, and they do the work very nicely. In some cases the cementum may have to be scraped several times before there is an attachment of the soft tissues. In the removal of the cementum endeavor to leave the exposed portion of the root as smooth as possible, as it is not so easily infected, and I believe this facilitates the attachment of the soft tissues.

Removal of Pulp.—The reflexes caused by the extreme sensitiveness of the pulp in teeth with pyorrhea alveolaris, which have entirely disappeared with its removal, have led me to practice this operation on the molars and bicuspids in most of the chronic cases of this disease treated, especially in those past middle life. This operation makes the removal of the tartar and the infected cementum less painful. In my practice I have yet to see anything but good result from this operation.

Immobility of the Teeth.—This is secured by the use of silk ligatures, crowns soldered in series, bridge-work, or whatever mechanical device the case may require to secure the required degree of immobility.

THE INTER-DENTAL BAND CROWN.*

BY E. W. PAUL.

In making the crown you prepare the root by cutting it down to a flat surface below the gum all around. Do not remove the enamel, as it preserves the natural contour of the gingival margin of the gum. Then ream out the canal just sufficiently to accommodate the post, being careful not to enlarge unnecessarily. With a trephine which can be secured in assorted sizes, or a very fine fissure bur, cut a groove around the opening of the pulp-canal about midway between the periphery of the canal and the periphery of the root, just deep enough to accommodate the width of band you desire.

^{*}Extract from Dominion Journal.

Make a band of gold to fit into this groove and solder it to a disk of gold or platinum. Burnish the disk to face of root with a piece of wood, the outline of the root will be clearly shown, to which you can trim. Now puncture the cap, insert a square post into root-canal, remove and solder the cap to the post. You then proceed as in ordinary crown by fitting porcelain facing, backing, and soldering it to place. It is claimed for this crown better results where it can be used, but small and flat roots hinder its application. But where used we secure a smooth joint and perfect adaptation, strength of the root, protection to the cement, non-irritation of the soft tissues, perfect alignment with the surface of the root, and the possibility of the rotation of the crown reduced to a minimum.

This inter-dental band may be used in conjunction with the Logan crown by fitting a band and cap to the face of the root, and a disk of gold or platinum to the end of the crown. Place a little wax between the disks and press the crown to position. Remove the crown with inter-dental band. Invest, remove the wax and fill in the intervening space between disks with solder.

PORCELAIN INLAYS BY THE WATER-BAG METHOD.*

BY I. N. BROOMELL, D. D. S., PHILADELPHIA, PA.

The principles involved in this method, which, it must be understood, refers to the formation of the matrix only, are closely allied to the process of swaging with the shot apparatus, which includes in both instances a complete envelopment of the object to be swaged by the swaging force and an equalized pressure in all directions at the same time.

The term "water-bag" method does not very fully describe the process, but it does so to exactly the same extent as does the term "shot" swaging method to that process. The rubber

^{*}From article in Cosmos.

water-bag is the essential factor in doing the work, all other parts being purely auxiliary.

The apparatus consists of four parts—a plunger, a soft rubber block or water-bag, a bed-plate, and a basal portion into which the other parts are fitted. To make use of this device the cavity is prepared in the same manner as for inlay work in general; that is, without undercuts and the margins clear cut and without bevel. Disregarding the subject of space, which is requisite in this as well as in all inlay-making when the cavity is situated approximately, you proceed to take an impression of the cavity with wax or impression composition, including in this impression as much of the surface of the tooth as it is possible to obtain, this latter detail serving as a guide for contour, fullness, etc. The concave surface of the bed-plate is next prepared for the reception and ready removal of a body of plaster of Paris. While this body of plaster is yet soft the wax plug carrying the impression of the cavity and associated tooth-surface is carefully forced into it, with the result of forming a plaster duplicate of the cavity and tooth. The work now proceeds in a manner somewhat similar to that of forming a metallic matrix in the mouth. Take a piece of gold or platinum foil somewhat larger than the cavity and trim it to a circular form. This precaution of trimming the foil to a circular form is one which profiteth much, all angular parts about the periphery of the metal sheet serving, as they do in swaging ordinary metal plates, as points of resistance and materially interfering with the ready adaptation of the metal to the parts. The metal sheet is slightly depressed into the plaster cavity by guarded pressure from a ball of cotton or other suitable medium, keeping this up until a considerable portion of the metal is brought into contact with the bottom of the cavity, thus reducing to a minimum the possibility of tearing the foil. The rupture of the foil at the point of greatest strain is, howéver, not a serious complication, as it may readily be bridged over by the porcelain and no harm will result during the baking process. With the foil roughly shaped to the plaster cavity, the swaging apparatus is next used to complete the formation of the matrix. The plaster reproduction of the tooth and cavity, together with the bed-plate, are placed in position in the cylinder, and upon these are placed the rubber water-bag attached to the metal plunger. The entire apparatus is then placed on an anvil or other equally solid foundation and the swaging force applied.

The swaging force may be either the blow from a heavy swaging hammer or it may be made by some slow, gradual pressure. A novel but very effectual method of applying the swaging force is that afforded by the downward pressure of a modern operating chair, placing the swager on the circular base surrounding the piston of the chair and gradually allowing the chair to descend upon it. After the swaging is completed the plaster form is removed from the bed-plate, and it will be noted that the foil has been forced into very close contact with all parts of the plaster cavity. Without removing the matrix from the plaster, the unbaked porcelain is inserted in the usual way, and the plaster and matrix are then transferred to the furnace.

It is a common rule of technics that all new methods to be of any practical value must possess some advantages over those already in use, and I shall therefore briefly enumerate the qualifications which warrant the recognition of the system thus described.

First. Adaptability. The foil is evenly and accurately swaged into and about the margins of the cavity, and, being held in this form by the plaster mold, it is unalterable.

Second. The entire surface of the foil being acted upon by an equalized pressure at one and the same time, results in a matrix free from springiness.

Third. There is no withdrawal of the matrix from the cavity, consequently no alteration in its shape.

Fourth. The work may be accomplished away from the mouth and during the patient's absence.

BRIDGE WORK.*

BY A. W. MCCANDLESS.

No matter how large the bridge nor how many attachments, I now swage up the saddle from one piece of platinum of twenty-eight gauge.

In the first place, of course the caps must all be in place in the mouth, and a plaster impression is taken. After removal of the impression with the abutments in place the caps having been filled with wax to facilitate their removal a model is run up and the impression cut away. The case is now prepared so that a mold in sand can be readily secured just as if you were getting up dies for a plate.

These being prepared, a piece of platinum cut to pattern is easily swaged for the entire case. If through any cause an absolutely perfect adjustment does not result, heat the counter die as warm as can be held in the hand and place in the counter a piece of base plate gutta percha; this will soon become soft; now swage again and the saddle will fit perfectly. This gutta percha idea was evolved from the fertile brain of Dr. Taggart, whom I have seen using it in swaging plates.

Before the final swaging of the saddle it is well to cut a V-shaped niche in it at a point over each cap, which process makes the soldering easier. At this point the caps are removed from the model, the wax melted out of them, then they are replaced, the saddle adjusted, the two waxed firmly together with sticky wax, removed from the model and invested in Brophy's investing material. I attribute in no small degree my success in this work to this material. It stands the heat beautifully, without shrinkage or cracking, and it makes one have a very comfortable feeling to see how nicely the case goes back on the model after the soldering is completed. The saddle and caps now united into one piece are placed in the mouth so that the saddle may be closely fitted to the gum tissue upon which it is to rest. It is well to fasten the caps to the roots with a small amount of gutta percha, so that you may know that the relations are

^{*}Extract from Dental Review.

not disturbed. A previously prepared "bite" is here inserted into the mouth and the correct articulation obtained. Take another plaster impression of the mouth with the bridge in place, the resultant model is correct and holds the saddle firmly so that it cannot be bent or disturbed by any pressure upon it, and besides one has the feeling of security and confidence that up to date everything is absolutely correct and right. The next step, of course, is to assemble the facings. After securing the case in the investment the wax is boiled out, and the iridio-platinum wire is put into place.

Unless absolutely sure that the articulation cannot be improved upon, the wire is soldered to the saddle, but the pins of the facings are not united to the wire.

It is now an easy matter to remove all from the investment. Place the bridge—which now consists of saddle, caps, posts and wire—upon the model, wax up the facings and try in the mouth. In this way the bridge is firmly held in place, with no possibility of its bending or moving out of shape or position.

An opportunity is thus given to study the case in all its details and bearings and to get an arrangement of the teeth that will be the most artistic and natural and pleasing in its effects.

"THERE IS NO SUCH THING AS A TRUE DENTAL PROFESSION."*

In commenting upon the suspension of the *Indiana Dental Journal* the editor of the *International* makes use of the expression at the head of this editorial. It is a statement which begets within us antagonism and irritation. If it is true, it is a sad commentary upon the work of the thousands of honorable and ethical men who have striven and are still striving for professional excellence in the dental profession, and if it is false, it should be condemned, and that *promptly, thoroughly and finally*.

When we turn to the justification of this pronunciamento

^{*}Editorial in Western Dental Journal.

by the editor of the *International* and give a careful consideration of editorial writing in that journal, we are forced to believe that the argument for such a statement rests wholly upon the fact that the independent dental journals do not receive the support necessary for their existence. We entirely and most emphatically object to such conclusions. The argument is not made with logic. It is an outcome of hypersensitiveness which feigns to believe that no good can come out of a journal published by a supply house, and in this spirit the editor berates the profession generally because it chooses the literature which is the most useful, and *does not* believe that editorial expression is governed by the publishers' interest. This latter claim is so narrow-minded and apears so silly to those who are in a position to speak with authority that it does not deserve argument.

In looking over other editorials in the *International*, however, we are constrained to believe that even its editor, who claims there is "no such thing as a true dental profession," himself hardly believes such a statement, for in the December issue, page 819, he says:

"The dentist is closing his century with the happy consciousness that he has passed through the childhood of his profession and is now standing on firm ground awaiting calmly the new day that seems already breaking along the horizon of the coming era."

And again Dr. Truman, at the fiftieth anniversary of the discovery of anesthesia, in his address, said of dentistry:

"It was born late. It began its life in the middle of the last century and has been growing and building its own centers of instruction, laying its foundations in therapeutics and pathology, and upon expriences creating a profession worthy the name. Standing here this evening, before this august assembly, I feel that the representation from fourteen States, gathered here to do honor to one of our number, indicates a professional spirit which rejoices my heart."

Now, in face of these eloquent words, what conclusion are we to arrive at if he now states "there is no such thing as a true

dental profession"? We respectfully submit that while it is too true that "the apathy of dentists to the interests of their calling is simply appalling," yet only a brief look over the field, which contains great numbers of honorable dental professional men, supporting their professional societies and contributing their time and money, teaching and writing, all for the advancement of the usefulness of the dental profession, will surely convince any man that THERE IS SUCH A THING AS A TRUE DENTAL PROFESSION, and that such expressions as the heading of this editorial are untrue, discouraging, and of evil influence.

THE USE OF HIGH- AND LOW-FUSING PORCELAIN INLAYS AND CAST-GOLD FILLINGS.*

BY P. A. MICHEL, D. D. S., NEW ORLEANS.

Before proceeding with the demonstration, I shall name the advantages of porcelain inlays as fillings. They are advantages over both metallic and cement fillings. Being of the same shade of the teeth in which they are, they do not attract attention like any of the metallic fillings, which, when large, are very showy, especially in the anterior teeth. They are not at all noticeable, in fact, when they are well matched to the teeth in which they are inserted, the glossy surface giving them the same appearance as that of the natural teeth.

Their advantage over cement is their durability. They will last much longer than cement, as they resist the action of the oral fluids, and being very hard and perfectly smooth, they resist abrasion. It is true, they are set with cement, but there is so very little of that exposed, when the inlay fits perfectly, that there is practically no action upon it by the oral fluids. That, in addition, is guarded against by a coating of paraffine, left to wear off, over the marginal joints of the inlay during cement crystallization.

Now I shall proceed with the modus operandi.

After removing all the decay from the cavity, it should be relieved of all undercuts, either by cutting them away, if the

^{*}From Dental Clippings.

cavity is small, or by filling them with temporary stopping, if the cavity is large, so as not to interfere with the removal of the cavity-impression.

The impression is taken with cement, by mixing it rather stiff and pressing it into the cavity and allowing it to harden. The impression must extend over the surface of the tooth also, for strength and to give the contour of the tooth. Before taking the impression the cavity and adjoining surfaces must first be coated with a thin film of vaseline, to prevent adhesion of the cement.

Next, a die and counter-die are made for swaging the "matrix." The die is made by forcing the impression into softened modeling compound, with the impression surface exposed. The counter-die is made by pressing another piece of compound onto the die. Old compound is preferable on account of its hardness. Cold dampness or a thin film of vaseline will prevent compound adhering to compound.

The matrix, which is of No. 60 rolled gold-platinum foil, is then swaged and invested in powdered asbestos and water paste in a platinum cup. The asbestos powder is mixed with water or matrix is invested by placing on this and tapping the sides of the alcohol to a creamy consistency, and the cup filled with it. The cup gently, so as not to alter its shape in any way.

After getting the shade of the tooth (under saliva) with the shade ring accompanying the box of inlay material, a "body" is chosen slightly darker than the right shade. This is done to allow for some burning of the coloring matter in the body during the baking process. I find that a darker color must be used for the low- than for the high-fusing inlay, as it seems to lighten more in baking.

After the body has been selected, it is mixed with distilled or filtered water to a creamy consistency, and, by means of a small brush, it is placed into the matrix. Tapping on the cup very gently will make the inlay denser by bringing the particles closer together. The asbestos cup investment must be dried over a flame before the body is placed in the matrix.

Then comes the baking process, and here is where we come to a difference in the making of the two kinds of inlays. The high-fusing inlay requires much more heat than the low-fusing, and has to be baked in an electric, gas, or coke oven. The low-fusing inlay can be baked in the electric oven also, but that is not necessary, as it does not require such great heat as the other, and can be baked in any gas heater which has a bellows attachment, or with the blowpipe alone; provided the caloric be retained by some cylinder of low conductivity, and the blast blaze strike the investment cup from below. A Lewis heater answers admirably.

Two bakings are necessary, and sometimes more, as it is better and more accurate than to attempt to finish in one. The inlay should be baked until the body fuses, and then it will have a bright glossy surface. In removing the inlay from the matrix the gold should be peeled away from the edges, so as not to chip themoff. The high-fusing inlay is less liable to chip than the low.

After the inlay is baked the back will be smooth and glossy like the face. This smooth surface is destroyed by etching with hydrofluoric acid. To do so, place the inlay, face downward, into a piece of softened wax, and put a drop of the acid on it. After letting stand for a few minutes, wash off the acid, and the back of the inlay will be found to be quite rough.

The inlay is now ready to be set. Place the inlay in the cavity, having first put on the rubber dam, and, with a pencil, make a mark across the inlay and the cavity margin, so as to give the accurate position. Remove with a small piece of wood tipped with wax, and set with cement in the ordinary way, taking care not to press too hard, as too much pressure would fracture a very thin inlay.

It is a good idea to try the inlay in the tooth before putting on the rubber dam, so as to see how the color of the inlay compares with that of the tooth, to know what color of cement to use for setting. The cement seems to have a tendency to turn the inlay lighter, hence a darker cement must be used, except when the inlay itself is darker. No attention need be paid to the color of the inlay when the tooth is dry, as it (the tooth) is lighter then than when under saliva.

The high-fusing body makes a denser and more durable inlay, and would be better for restoring wide proximo-occlusal angles. Neither would be safe on incisal edges or angles.

CAST-GOLD FILLINGS.

These fillings are put in teeth that are too weak to allow the insertion of a metallic filling, and on which crowns are not desired; bicuspids especially. They substitute a durable filling for cement.

The cavity is prepared without undercuts, like those for inlays, and a cement impression taken, coating first with vaseline. Then a die and a counter-die are made with modeling compound and the cement impression, and the matrix swaged. No. 60 rolled gold-platinum foil is used for this also.

If the pulp has been extracted (and these are the favorable cases) the canals are stopped up with wax before the impression is taken, so that it can be removed. The margins of the cavity should be smoothed with finishing burs. This little detail applies also to the cavity preparation for porcelain inlays.

After swaging the matrix, place it in the cavity and press it well against the margins with cotton, and then perforate the gold with a sharp point for the insertion of a pin, dowel, or flange into the root canal.

Remove from the cavity and drop a little sticky wax into the bottom of the matrix. Replace in the cavity, and holding the pin with a pair of pliers, heat it and place it in position. When the matrix is removed the pin will be fixed in position by the wax. Contour out the matrix with wax, making it greater than the contour of the filling will be when polished—plus contour. Place in the tooth, and if satisfactory, remove and burnish a piece of the same platinum-gold foil over the wax, covering all the surfaces except the morsal, which must be left open for the "casting." Clip the gold all around with small scissors, and bend so that it will implaster, and invest. Plaster, 3 parts, and pumice, 1 part, make a very good investing material. Boil out the wax, and cut the investment as small as possible and place it on the heating block. Twenty-two karat gold solder is preferable for this, as it is nearest the color of pure gold. It should be cut into pieces that will extend from the bottom of the matrix and protrude a little. The heat is applied by the blowpipe from all sides except the morsal opening, and just enough should be applied to melt the solder, as too great heat will cause the matrix to flow itself with the solder, and ruin the filling, especially if borax flux be used in excess.

After the matrix is filled it should be allowed to cool for a few minutes, to prevent shrinkage of the margins; then the investment is broken away, and it is polished very roughly. Grooves can be cut in the filling so as to give greater strength to the cement, and then it is placed in the tooth, and, if satisfactory, it is set with cement. In a day or more after the cement has set the filling can be polished, the same as any other. If it is desired, a small groove can be cut around the filling, along the margin, after the cement has set, and gold or amalgam inserted, thus leaving no cement at all exposed to the fluids of the mouth.

To insert a cast-gold filling, the teeth should be well separated, as good working space is necessary. It is also desirable to have the rubber dam in position while working.

GENERAL SUGGESTIONS.

For final polishing, in situ, sufficient inter-proximate space must be preserved for reaching and disking away hard material at cervical margins without destroying or marring the bell-shaped knuckling contour. What is, in dental slang, termed a "grub catcher" will otherwise be produced.

It is entirely possible, for either inlay or cast filling work, to dispense with the cement cavity-impression by burnishing the matrix directly into the prepared cavity, under a pellet of cotton or of spunk bark. The cement impression, however, offers the advantage of producing, in the absence of the patient, several fillings if the first made does not give perfect color and contour.

The cavity margins should be slightly but carefully bevelled outwardly, and a partially filled matrix of porcelain or solder should be replaced into the cavity and burnished under cotton or spunk a last time, before complete contouring in matrix, so that the marginal adaptation may be perfect. For the cast-gold filling the detail should be carried out with axial walls of matrix partially filled with 22k. solder, before the contour is made complete with wax overlined with foil.

The cement-impression method, when perfect, obviates the necessity of final margin burnishing before completion of inlay or of casting.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

THE COLLAR CROWN AND PYORRHEA ALVEOLARIS. JOSEPH HEAD.

The collar crown going under the gum cannot always be avoided. It in many instances does more good than harm, but we should always bear in mind that any band placed on a tooth so that it will harbor germs will prove a possible seat for the beginning of pyorrhea alveolaris.—Cosmos.

PULP PROTECTOR.

S. B. LUCKIE.

Many preparations for protecting the dental pulp are in the market, their composition and properties being unknown. The utility of aristol dissolved in chloroform for this purpose, to make no reference to any antiseptic value it may possess to make it valuable, can be readily recognized, as it possesses a resinous quality and a rapid facility for drying, thus becoming a mechanical protector.—*Cosmos*.

NORMAL SOLUTIONS.

A normal solution of any substance is a solution in which that substance exists in the proportion of its molecular weight in 1,000 parts of water. Sodium hydroxide, NaHO, for instance, has the molecular weight of 40, hence a normal solution of the substance contains 40 parts sodium hydroxide in 1,000 parts of distilled water. A centinormal solution contains one one-hundredth, and a decinormal one-tenth of that amount.—*Ex*.

METRIC SYSTEM AT A GLANCE.

The American Association for the Advancement of Science says the following lines are all that is necessary for the

physician to learn in order to prescribe in the metric system:

1,000 milligrams make one gram.

1,000 grams or cubic centimeters make one kilo or liter. 65 milligrams make one grain.

15½ grains make one gram.

31 grams make one ounce, Troy.

ON THE USES OF FORMALIN IN GLYCERIN.

Jordan recommends the use of a 40 per cent. solution of formic aldehyde in glycerin as an application to the throat, as a mouth wash, and as an application to the skin. The pain produced by using watery solutions of formaldehyde is entirely avoided. Solutions of from 1 to 4 per cent. are used. In follicular amygdalitis it is a specific, and it is of great value in tonsillar diphtheria. In aphthous and parasitic stomatitis, a single thorough application often suffices to bring about a cure. Formaldehyde may be thus applied to the skin in all parasitic diseases, especially in ringworm.

MOUTH-WASH FOR PYORRHEA ALVEOLARIS. A. C. HART.

I have found equal parts of pyrozone three per cent. medicinal and one-quarter per cent. solution of hydronaphthol to be an excellent mouth-wash. The slight amount of acid that may be present appears to have no detrimental action; in fact, I am a believer in slightly acid washes in the treatment of pyorrhea alveolaris, and have seen excellent results in my practice in the prevention of formation of tartar from the daily use of a weak solution of alum. The slight amount of acid present prevents the formation of tartar, because whenever the tartar is depositing there is present an alkaline action.—

Cosmos.

GUTTA PERCHA FOR SETTING CROWNS AND BRIDGES. W. H. TAGGART.

Set all your banded crowns and bridges with pink base plate gutta percha. Why? First, because it acts as a cushion be-

tween the crown and root, and if any undue strain comes it will yield before it will break. It acts to cushion the blow. Second, you can be more uniformly successful, as no haste is necessary, and third, as no haste is necessary, it takes away nearly all of that nerve strain which always accompanies the setting of a crown or bridge with cement. Fourth, the crown or bridge can be taken off at any time within five minutes for repairs or to fill an adjoining tooth; certainly a sufficient number of reasons for at least trying the process, which, if successfully mastered, will wean you forever from setting crowns or bridges with cement.—Dental Review.

CONTOUR WITH REFERENCE TO MUCOUS MEMBRANE. JOSEPH HEAD.

Every dentist knows that when he fills a tooth the health and cicanliness of the mucous membrane around the tooth is as much to be considered as the tooth itself. Contour that will preserve from future decay is not more to be considered than contour that will preserve the delicate structures of the interdental space, for on the health of the gums depends the health of the root. Any procedure that tends to permanently break the union of the peridental membrane with the gum does perhaps a necessary harm, but if, in addition, the dentist places adjacent to that laceration an appliance that of necessity will prove a locus for putrefactive growth, that dentist compels the patient to endure such risk of injury to the general system that any compensating esthetic or masticatory advantage sinks into humiliating insignificance.—Cosmos.

HOW TO MAKE SATISFACTORY PARTIAL LOWER PLATES. W. H. TAGGART.

Lower partial plates can be made most satisfactory of any plate worn, and yet how unsatisfactory the majority are, moving up and down at the slightest change of the muscles of the tongue of cheek, and only becoming comfortable after they have been ground so as to be too short to be useful.

Clasp one or two of the lower teeth properly and you may

perhaps prevent an intelligent patient from patronizing another dentist who knows his business.

In these clasp plates always have a lug extending on to the grinding surface, so as to prevent the clasp from riding up and down on the tooth to its injury, and also because the patient can bite at least fifty per cent harder, there being no undue stress on the soft tissues.

It is hard enough to hold our patients do the best we can, but don't, for heaven's sake, lose a patient because you can't make a satisfactory lower partial plate.—Review.

CIRCUMSCRIBED INFLAMMATION OF DENTAL PULP. s. b. luckie.

In circumscribed inflammation the lymphatics become blocked, and the infection is generally confined to a limited area. In inflammation of the diffused or phlegmonous character there is an extension beyond the affected location, the lymphatics taking up the infection. The effects of bacteria entering the blood are modified by the degree of resistance the patient possesses. If a person is in a fair systemic condition the blood coagulates readily, and thrombi form in the vessels. These thrombi may become infected by bacteria, and, becoming softened thereby, the infection will be conveyed further along the circulation. Fatal cases of bloodpoisoning are most generally due to a cachexia. Of course the condition is influenced by the extent of surface offered for absorption and by the surrounding structure. The character of structure surrounding an alveolar abscess, confining the pus-formation to a part, favors the development and virulence of the organisms, and it is not unusual to find constitutional disturbances, especially a rise of temperature, even in the case of circumscribed inflammation.—Cosmos.

METHOD OF STERILIZATION TO ARREST DENTAL ABSCESS.

A. C. HART.

In the treatment of acute dental abscesses the sterilization of the cementum is easily accomplished, in the majority of

cases one sterilization being sufficient to abort the abscess. The root-canal is opened and cleansed after the method suggested by Dr. Callahan. The canal is then dried, using a continuous hot-air blast. It is then flooded with a solution containing 10 per cent. of formalin and 50 per cent. of alcohol. This is vaporized slowly, using the Evans root-canal drier. Then there is carried into the root-canal myrtol on a wisp of cotton. The cotton is packed dry in a manner somewhat similar to that practiced by those who fill root-canals with cotton, and the myrtol is taken up with the pliers and brought in contact with the fibers of cotton. The external opening of the root-canal is filled with cement. This is allowed to remain until all soreness has disappeared from the tooth. Acetanilid comp. is given internally in five to ten grains; dose repeated every two hours, or oftener if necessary, for the relief of pain. Silica 6 x trit. three grains in one-quarter glass of water, one teaspoonful every half hour, is given to reduce the swelling.— Cosmos.

SECTIONAL BRIDGE.

C. S. GORE.

In a case where the two teeth to be used as abutments lean toward each other, my plan of construction is as follows: Prepare each abutment and crown separately, without regard to the other. With both crowns in position on the teeth take plaster impression and bite at the same time. Divide the impression first; remove the anterior half of the impression, then the posterior; then place the parts together and set the two crowns in the impression and pour the model with plaster and sand. Now fit the dummies to the abutments and invest model and all. After soldering all together, drill two small parallel holes through the thickest part of the dummies, and with a very fine ribbon saw bisect the piece at about a right angle to the two parallel holes. Place the two parts in position in the mouth, and enlarge the holes with oiled burs. This will overcome any contraction which may have taken place during soldering. Remove the parts from the mouth, and cut threads in the holes and make screws of heavy platinum-iridium wire. Set both sections at one mixing of cement, and place the screws in at once. The manner of making a bridge for cases of this character is a new one, as far as the author is aware, and he is very glad to offer it to the profession, as it lessens the sacrifice of tooth-structure and promises more permanence to the abutments, and consequently to the usefulness of the bridge.—*Cosmos*.

EDITORIAL.

THE TRI-STATE DENTAL MEETING.

A grand success but mildly expresses what the late dental meeting at Indianapolis really was. It was more than a success; it was delightful in every sense of the word and those who did not attend surely missed more than they realize.

Great credit is due the Executive Committee, Drs. Hunt, Callahan, and House, for, through their untiring efforts the meeting was not only in point of numbers present, but in merit, one of the best, if not the best, meetings ever held in America.

The essays were above the average in merit, showing much original thought. The clinics were good, and the dealers' displays probably the finest ever given at a dental meeting.

The German House afforded ample space and excellent accommodations. Wednesday evening a most enjoyable entertainment, consisting of reception, band concert, and luncheon, was given the visitors and friends, there being more than one thousand present.

The first tri-state meeting was held in Detroit, June, 1895, there being 500 in attendance. The second meeting was held at Put-in-Bay, Ohio, June, 1808, with an attendance of over 600. The third, just held at Indianapolis, was attended by 738 dentists. We are inclined to the belief that it is not policy to continue these meetings, but let the record stand for future

generations. The tri-state meetings have met all expectations; their mission has been accomplished and they will go down in history as the most successful series of dental meetings ever held.

NEW PUBLICATIONS.

Oral Pathology and Practice, a Text-book for the use of Students in Dental Colleges and a Hand-book for Dental Practitioners. By W. C. Barrett, M.D., D.D.S., M.D.S., L.L. D., Professor of the Principles and Practice of Dentistry and Oral Pathology in the University of Buffalo Dental Department; Professor of Dental Anatomy and Pathology in the Chicago College of Dental Surgery; late Professor of Oral Pathology in the University of Buffalo Medical Department; Consulting Oral Surgeon to the Buffalo General Hospital, etc., etc. Second Edition, revised, enlarged, and illustrated. Philadelphia: The S. S. White Dental Mfg. Co., Pub. 1901.

The popularity of this work is shown in the exhaustion of the first edition within two years. The author then set to work on the arduous task of revision for a second edition. This revision amounted nearly to a re-writing, not a chapter now reading as it did originally. Aside from the eighty or more pages of new matter, about one hundred illustrations, mostly original with this work, have been added.

Those who know Dr. Barrett know that he never does things by halves, and the completeness of this second edition sustains that reputation.

The addition of new material has made necessary a redivision of a portion of the subject-matter and increased the number of chapters by eight.

The use of heavier-faced type to make emphatic the most important portions of the text is an admirable feature.

The text is not only well written, but is presented in that concise but lucid manner that makes all portions of it interesting, and which has enabled the author to confine to one page that which ordinarily would require several.

Beginning with the general consideration of pathology, the author takes up the subjects of bacteriology and classification, fermentation, bacteriological pathology, septic and aseptic conditions, then inflammation and its concomitants, followed by a treatise on the various diseases and pathological conditions of the teeth and mouth, physical diagnosis, wounds and injuries, excessive bleeding, fractures and their treatment, dislocations and sprains, shock, collapse, etc. A certain amount of treatment is incorporated, and altogether the work is very complete.

The subject of syphilis is carefully considered, especially its manifestations in the oral cavity, five chapters being devoted to this dreaded but important disease.

It is impossible in our limited space to give an adequate idea of the whole contents; it must be read and studied to be comprehended.

Dr. Barrett deserves the thanks of the profession for the preparation of so valuable a book, and the S. S. White Co. are to be congratulated on securing publication of it. The book is neatly printed, substantially bound and in every way first-class.

Self Examination for Medical Students. 3.500 Questions on Medical Subjects. Arranged for Self Examination, with the Proper References to Standard Works, in which the correct replies will be found. Third edition, enlarged, with questions of the State Examining Boards of New York, Pennsylvania and Illinois. Philadelphia: P. Blakiston's Sons & Co. 1901. Price 10 cents.

SOCIETY.

INDIANA DENTAL SOCIETY.

The following are the officers for the ensuing year: President, C. E. Pittman, Evansville: Vice-President, Harry C. Kahlo, Indianapolis; three members of State Board of Dental Examiners, M. A. Mason, Fort Wayne; D. L. Stein, Indianapolis; F. R. Henshaw, Middletown.

MICHIGAN STATE DENTAL SOCIETY.

The officers elected for 1901-1902 are: President, C. H. Oakman, Detroit; First Vice-President, F. A. Honey, Kalamazoo; Second Vice-President, Charles C. Noble, Detroit; Secretary, F. H. Essig, Dowagiac; Treasurer, G. H. Mosher, Jackson; Member Board of Censors, H. C. Raymond, Detroit.

ILLINOIS STATE DENTAL SOCIETY.

Following is a list of officers and committees elected for the ensuing year at the last annual meeting of the Illinois State Dental Society:

President—M. L. Hanaford, Rockford. Vice-President—J. E. Hinkins, Chicago.

Secretary—A. H. Peck, 92 State St., Chicago.

Treasurer—C. N. Johnson, Chicago.

Librarian—J. T. Cummins, Metropolis City.

Members of Executive Council—J. R. Rayburn, Fairbury; W. E. Holland, Jerseyville; J. G. Reid, Chicago.

Executive Committee—J. W. Cormany, Mt. Carroli.

NATIONAL DENTAL ASSOCIATION.

The fourth annual meeting of the National Dental Association will be held in Milwaukee, Wis., commencing Tuesday, August 6, continuing four days. The Masonic Temple hall, which is conveniently located and especially suited to the various needs of the Association, has been secured.

Special railroad rates are being secured and will be announced later.

All regularly organized dental associations are entitled to one delegate for each ten members, and these associations are urged to send full delegations.

Dr. G. V. I. Brown, of Milwaukee, chairman of the local committee, will engage rooms at the hotels and answer questions regarding local arrangements.

G. V. Black, President.
J. D. Patterson, Chairman Ex. Com.
A. H. Peck, Secretary.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

THE LARGEST TUSK.—Landsberger, Humble & Co. have sold to the British Museum (Natural History Department, South Kensington), for £350 an elephant's tusk measuring 10 ft. 2½ in. and weighing 226½ lbs. This is said to be the largest ivory tusk ever known.—Brit. Journal.

A SACCHARIN SUBSTITUTE.—This is prepared by passing purified ammonia gas through the anhydride of benzoic-o-sulphamide suspended in water, until the anhydride has dissolved, and concentrating the solution in vacuo at about 50° C., and allowing it to cool. The ammoniated product separates in amorphous crystals, very readily soluble in water, sweeter than saccharin and less toxic.

THE SIMPLEST EXPLANATION OF THE FUNCTIONS OF THE NERVOUS SYSTEM. By Dr. G. W. Drake.—The author's explanation involves the interesting hypothesis of the existence of a specific energy peculiar to nervous tissue. Sound-waves, light, mechanical touch, odoriferous particles, sapid substances, under appropriate circumstances, liberate nerve energy, which is conducted to the auditory centre visual centres, etc., and there makes a neurograph of sound, sight, touch, etc.

Bacterial Resistance to Cold.—A large variety of bacteria, including the germs of typhoid fever, diphtheria, anthrax, and other pathogenic and ordinary bacilli, have been found to endure the cold of liquid air and liquid hydrogen without injury. There was no alteration, either in the appearance or growth of the bacteria, after a ten-hour exposure to this intense cold, the examination being made both microscopically and by culture. The typhoid bacillus has been known in many instances to be transmitted through ice, frozen at a temperature below zero, from the typhoid excretions thrown upon it. A not very high degree of heat, however, is sufficient to destroy their life.

TEMPERATURE MINUS 180 C.—M. d'Arsonval recently made some astonishing demonstrations with liquefied air in the Paris museum of natural history. By enormous pressures he reached a temperature of minus 180 Centigrade. M. d'Arsonval exhibited a beefsteak dipped in liquefied air and then let it fall on the ..oor where it sounded like a stone and broke to pieces. It was eventually reduced to a pink powder, easy to masticate and assimilate, and likely to be of important service in hospitals. Ice dipped in

liquefied air cut glass like a diamond, mercury became hard as antimony. Metals, said M. d'Arsonval, especially steel, had their qualities increased tenfold by the application of liquefied air.

Average Age at Death of Death of Deaths.—The lowest death rate in any vocation is said to be that found in the ranks of clergymen, the average age at death in this profession being quoted as about sixty-eight years. The variations in the average ages at death of the different callings in life run from sixty-eight to forty-three, and the death-rate of dentists is given at forty five, this mortality is about on an average with that noticed in people who live lives of excessive work, either mental or physical, and especially if the complication is added of an occupation requiring a cramped and constrained position. The very nature of a demist's calling necessitates an indoor life, and every effort should be made by practitioners in dentistry to make a decided endeavor to cultivate those obvious methods of life which tend to counteract the deleterious effects of the severe labor and appreciable exhaustion incident to the arduous nature of a dentist's daily work.—Med. Press and Circular.

PECULIAR ACCIDENT TO A DENTIST.-Dr. John Young, of Smith's Falls, Ontario, recently met his death in a simple and peculiar way. It seems that he had his sleeping apartments above his office, and next to the bed chamber was a bath-room; an electric lamp attached to a long cord was carried from the hed-room to the bath room to give light. The night of the accident the doctor was taking a bath and the lamp burned out, so he took hold of the cord and carried it out to the bed-room to get a new lamp. While walking out with both hands and feet wet he stepped on an iron heat register which immediately sent a hundred and ten volts of electricity through his body. He fell, and in so doing wound the cord about his body and knocked three lengths of stove pipe down, his foot remaining in contact with the pipes, thus making a good connection and allowing the electricity to pass through his body from 11 p. m. at night until he was found dead the next morning, about 9 a. m. Where the socket of the lamp was in contact with his arm and naked body the skin was considerably burned; the foot that was in contact with the pipe was also burned. The verdict of the coroner's jury was death by accident from electric shock.-Dominion Journal.

PAN-AMERICAN EXPOSITION.—Have you attended the Pan-American Exposition yet? If not, you should not miss this grand opportunity. It is said to be one of the best ever given, and no one can go through it without receiving great benefit. Aside from seeing the exposition, Buffalo and its surroundings, Niagara Falls and other near-by historic places furnish unexcelled opportunities for a summer's outing.

OHIO DENTAL JOURNAL.

VOL. XXI.

AUGUST, 1901.

No. 8.

CONTRIBUTIONS.

DISEASE OF THE GUM BORDERS AND SOCKETS OF THE TEETH.*

BY C. M. WRIGHT, B. S., A. M., D. D. S., CINCINNATI.

Riggs' disease, alias pyorrhea alveolaris, alias phagedenic pericementitis, interstitial gingivitis, ulitis purulosis, pericemental necrobiosis and other histological and pathological aliases, has been passing through all the fluctuations of theoretical and experimental eruptions; yet its etiology is really no more obscure than that of catarrh of the respiratory passages.

In this disease of the gums and sockets, as in specific diseases like typhoid fever or diphtheria, we find a local inflammation more or less intense, and including more or less tissue. It may be bounded by the border of the gum, or it may extend to the membranes of support and nutrition encircling the root of the tooth, or to the osseous wall about the root. In any case it is an inflammation presenting in character one or many phases or degrees, just as other inflammations do, though not necessarily presenting all the classic signs, and rarely exhibiting constitutional disturbance enough to induce fever.

^{*}Abstract of paper read before the Tri-State Dental meeting, Indianapolis, June, 1901.

The circulation in the tiny blood-vessels of the part is disordered, and we have in many of these cases an active and afterwards a passive hyperemia or congestion; simultaneously we have exudates from the blood, which also vary according to the progress of the disease and changes in the circulation and tissues. A serous secretion at first may later be fibrinous, hemorrhagic, muco-purulent, purulent. Tissues, cellular and intercellular, in this circumscribed area, soaked with the excess of blood, exudate, soften, take on disordered nutritive action, become reduced to conditions resembling embryonic tissue (connective tissues have been accused of always retaining a memory of the mesoblast); cellular elements multiply and try to organize and rebuild; a struggle towards regeneration continues, but irritants from without, mechanical and chemical, and obstructions and toxines from within oppose the struggle for existence on the part of the protoplasm of these tissues, and we have the complications of a chronic disease, with all that this implies. At any stage of the conflict the dental surgeon can afford aid.

I know of no surgical operation that requires more discrimination, when we consider the conditions that favor chronicity in these tissues and locations, such as the lasting changes which take place in the tissue itself, in the course of this disease; the repeated injury by external influences, such as concretions and infections, especially by bacteria; unfavorable nutritive conditions in the tissues, like necrobiosis or atrophy. When we reflect upon the methods the tissues themselves display in efforts toward a physiological type, dealing with the exudates and necrosed tissue by absorption or sequestration and expulsion, and in the meantime by granulation and regenerative methods struggling to repair and restore to health, we can understand that the more perfect our recognition of the exact pathological state at any given period of the disease, the better able shall we be to assist rather than hinder these efforts on the part of the tissues themselves. Therefore, judgment is as important as surgical dexterity and thoroughness on the part of the operator.

Histology shows us that in the early life of the marginal structures a delicate membrane (Nasmyth's) bridges over the gap between gum and enamel, and that this disappears, leaving the space unprotected; also that the pericemental connective tissue in early life is less dense and fibrous, than in middle life and old age; that these periodontal membranes are prone to senile changes and degenerations, liable to obsolescence; that there is probably a glandular excretive function of the epithelia just under the free-border of the gum. * * *

The history of this disease in man and domestic animals points to the fact that these gum borders, liable as they are to degenerations, are intimately dependent on the functional health of possibly every gland, membrane and nerve centre in the body, and on the quality and quantity of the body juices, on cachexiæ and diatheses. * *

Let me be positive again. The far-away predisposing cause of Riggs' disease is frequently a neurosis. The neurasthenic professional and business man; the stay-at-home wife, overburdened with the monotony of her existence; the epileptic and the paralytic exhibit this disease as a sequence of neurosis, and, as the psycho-physiologist might show, as a result of abnormal emotions, although this latter factor is too frequently neglected in the consideration of obscure causes of bodily ailments on account of the difficulty of bringing the phenomena under careful laboratory observation, the general medical practitioner and the surgeon, and even the laity recognize the important part the emotions play in the evolution of disease after surgical operations. Depressing emotions frequently appear as assisting in the development of tuberculosis. Puerperal fever is also encouraged by depressing emotions from fear or reproach. These are recognized bodily effects from mental states, and in a series of laboratory experiments on rabbits, pigeons and white mice it has been shown that animals under fright presented an increased susceptibility to inoculation with cultures of pathogenic microbes. "Asthenic emotions may thus be regarded as corresponding in their action to traumatism, chill, fatigue, inanition, loss of blood, etc. It is not merely that the condition of the vessels change under emotional disturbance, but the phagocytes themselves exhibit the influence of changed conditions, in apparent loss of vitality, with corresponding loss of the property of being attracted to the invading microbes or the product of their secretion."

Diseases of the blood and of the circulation are predisposing causes-anemia, plethora, waste products not eliminated by distant glands, litheasis, faulty gas exchanges, in lungs and other tissues, persistent poisoning from house air, impregnated every time atmospheric pressure overcomes modern sanitary plumbing. Now the dentist who attacks the local manifestations is acting in a perfectly reasonable and logical manner, and does much good by his delicate surgery and topical treatment, but the remote causes remain alert and ready for attack at any time that local opportunities offer. When we can treat and cure gland disturbance and rebuild nerve tissue, and strike the hydraheaded gout and put all the blood-elaborating and waste-eliminating organs within the pale of physiology, with all that this means in the struggle for an existence impregnated by hereditary and encapsuled by environment, we may prevent this disease from occurrence and recurrence, and we are no farther away from this millennium of the therapeuties than are our brilliant and worthy confreres in other departments of medicine.

Intelligent local treatment is the first consideration with us, as it is with the elements within the organism, and as it is with us in the treatment of dental caries. * * *

Local stimulation, applications of heat or cold and medicines, or massage, are as important, if fortunately selected, as is the direct surgical removal of a visible irritant.

The sensitive nerve terminals and reflex motor responses, the capillary circulation, the laucocytes congregated at the point of distress, are all sensitive to local impressions and susceptible to intelligent medication—else why use iodine or ointments or massage or ice in certain cases? And it may be proper to assert just here that in the treatment of constitutional phases, or more

remote special organs like the nervous system, or the intestinal tract or other diseases like syphilis or tuberculosis, or concurrent catarrhal manifestations that consultations with the family physician or other specialists should be insisted upon for the benefit of the patient, that the broadest measures in therapeutics may be adopted and harmoniously carried out by the combined-knowledge, methods and training which are the result only of special study. I have no sympathy with the specialist who is sufficient unto himself, whether his practice is confined to diseases of the nervous system, to surgery, to internal medicine or to general practice. * *

May I be permitted also to suggest that as in the local treatment of this disease of the gums the most delicate and intelligent surgery is required and a persistent patience not necessary in more brilliant efforts like the removal of a tumor or the mastoid operation, so-called, and as time and skill are the business assets of the operator, all old ideas about compensation that have grown up between dentist and patient must be done away with. We are placed in the curious position of being able at any moment, by surgical elimination, to effect a radical cure of the disease, and yet our earnest desire and the demands of cultured patients are all for the saving of the teeth. We have become imbued with the doctrine that the dentist's highest aim is to save to usefulness and beauty the natural teeth. Our lives are spent in this effort—in fighting the diseases which threaten the destruction of these organs. We fight caries, pulpitis, alveolaritis, and Riggs' disease—not a very long list, but chronic, progressive and complicated in character. 'This special Riggs' disease is the most destructive in its effects upon the patient and upon his teeth, and requires longer, more frequent operations than any other, not excepting caries. The recognition of these facts is important to dentist and patient. * *

The adjustment of compensation to the dentist for his efforts in battling with Riggs' disease must be upon the plane of the other specialists in medicine who treat the eye, the ear, the nose or the throat. If we cannot rise to this plane (and this may be why many dentists offer no hope of palliation by treat-

ment), then we should retire to the older platform and recommend extraction and plates.

The general health of the patient afflicted with Riggs' disease demands either intelligent and perhaps prolonged treatment and constant watchfulness, followed by persistent hygienic attention, or the other alternative, radical cure by extraction; and we must, as conservators of the health of our patients and in the interests of preventive medicine, plainly state the case to those who come to us for advice. I cannot here point out even the partial and obvious diseases which may result from neglected pyorrhea alveolaris—the sequelæ of Riggs' disease—by the interdependence of the health of organs and tissue upon one another is too well known for us to permit the whole organism to become gradually undermined by this progressive, chronic and curable disease.

CONTINUED ANAESTHESIA WITH NITROUS OXID, UNDER DEFINITE PRESSURE.*

W. A. HECKARD, D. D. S., INDIANAPOLIS, IND.

Pure nitrous oxid, when inhaled without oxygen or air, first produces sleep. Continued, it causes anæsthesia, and finally asphyxia. At this latter stage it becomes dangerous. While there are some who deny that asphyxia is at last produced, the fact that oxygen will prevent the occurrence of the symptoms, would seem to prove that the condition is properly called asphyxia. By mixing a small percentage of oxygen with the nitrous oxid, cyanosis, jerky and irregular breathing, deep stertor, and movements of the muscular system are eliminated. The addition of air or oxygen renders nitrous oxid anæsthesia agreeable to children, anæmics, debilitated persons, patients with enlarged tonsils and lung affections, those advanced in years, and those who claim to have always heretofore had unpleasant sensations from the use of nitrous oxid alone.

^{*}Abstract of paper read before Tri-State Dental Meeting, Indianapolis. June, 1901.

All plans which depend upon the nares as an avenue for the introduction of the gas, are open to serious objections. A vast number of people are mouth-breathers, due to catarrhal affections, hay fever, hypertrophied turbinates, or nasal passages filled with polyps. During the fall, winter and spring those who are subject to "bad colds in the head" frequently are unable to breathe through the nose. If the patient is unable to breathe through the nose with comfort, that avenue is not a favorable one for the introduction of an anæsthetic, and, also, if the nasal passages are so nearly closed that breathing through them is difficult, they should not be further irritated by passing a tube through them. Furthermore, it is not infrequent that the nasal passages will spasmodically close by reflex action during anæsthesia. Therefore, the nose is not the ideal avenue for introducing gas.

The objection is met by using the mouth as an avenue for introduction, this method also insuring the mixture of atmosphere with the anæsthetic.

Having experimented with several styles of nozzles with which to spray the gas into the mouth, I have found that the most convenient are the ones in which the nozzle and mouth prop are combined. They are all so constructed that they can be taken apart and sterilized. When extracting is to be done, the hook nozzle will be found to fit any case, while for operating on sensitive dentin or for removing live pulps, the rubber cork and nozzle combination is the best. It can be fitted to any mouth, no matter how irregular the teeth, and even although some teeth have been extracted.

The holes through which the gas passes are cut in such a manner that the gas is thrown out in a flat, flame-like spray, similar to the butterfly flame of an artificial gas burner.

My apparatus as at present constructed consists of a metallic tank, two gauges, a pressure regulator, some nozzles and a nose clamp. The tank or receiver is of fifteen gallons capacity. Small receivers do not afford an opportunity to secure an even supply of gas under a definite pressure. Without a definite pressure, capable of being regulated by the operator, sustained perfect anæsthesia is impossible. Connected to the receiver by a yoke are two one-hundred-gallon cylinders of nitrous oxid liquid gas. By opening the gas valve on the left the gas in the cylinder will escape into the receiver. A pressure gauge on the left indicates the amount of gas in the receiver. When a hundred-gallon cylinder of gas is allowed to flow into the receiver, the gauge will show a pressure of one hundred and twenty pounds to the square inch. This is now *compressed* gas instead of *liquid* gas.

Anæsthetization is begun with a low pressure, which is gradually increased as the patient passes under the influence of the gas. When the patient is sufficiently anæsthetized, the regulator may remain set at any pressure necessary to maintain any desired stage of anæsthesia for an indefinite period, leaving the operator with both hands free to work, and the patient with the mouth open. It is often desirable during some operations to have the patient but partially anæsthetized, and this can be satisfactorily accomplished by a turn up or down of the regulator, which increases or diminishes the volume of gas.

In this connection I may state that the rapid expansion of the gas as it flows from the cylinder into the receiver renders the gas very cold, but if the receiver is filled some time before the operation, the compressed gas will be warmed to the temperature of the room. This is a decided advantage over injecting cold gas into the nose and throat. The administration of cold gas will sometimes cause inflammation of the mucous membrane lining the respiratory tract, and it is possible that it might set up a train of symptoms leading to pneumonia. Warm gas acts more quickly than cold, and less of it is needed to produce anæsthesia.

There is nothing especially new to learn in using this apparatus. The usual preliminary precautions are taken and the patient fitted with the nozzle and prop best adapted for the work in hand. The receiver has been previously filled in order that the gas may assume the temperature of the room. The mouth is then thoroughly cleansed with borolyptol and distilled water, or something equally as efficient, by means of a Davidson spray bottle and an air pressure of from thirty to forty pounds. The nozzle and nose clamp are then adjusted and the administration of the gas begun with a pressure of two or three pounds.

Hypnotic suggestion is always attempted, to divert the patient's attention from unpleasant thoughts. The sound of the escaping gas is so slight at first and is so gradually increased as the patient passes under the influence, that it is seldom noticed. This is especially true in my practice, and will be so in all the offices where compressed air is freely used, as the patient becomes accustomed to the sound while the mouth is being sprayed. If it is desired to decrease the amount of atmosphere being inhaled, and to hasten anæsthesia, a rubber cloth, a napkin, or even the hand may be used to partially close the buccal orifice. The amount of atmosphere admitted will be regulated by the appearance and condition of the patient. This can only be determined by experience.

If the operation is the extraction of a single tooth, the assistant may shut off the gas as soon as anæsthesia is complete. If the operation is one that will require some time to complete, the desired stage of anæsthesia is readily maintained by increasing or decreasing the supply of gas to meet the necessities of the occasion. Sensitive dentin may be excavated, live pulps extracted, the alveolar process trephined or other operations performed with perfect satisfaction to both patient and operator. The patient does not struggle or show distress, as is so frequently the case when the face piece is used. There are no asphyxial symptoms, and recovery is prompt and complete, with no bad after-effects. Beyond all, the operator can do better work, since he is not hurried. He can pause and consider the best move to make next. He can be deliberate, even if he be not dexterous.

REMINISCENCES OF PIONEERS IN DENTISTRY.*

BY J. TAFT, M. D., D. D. S., CINCINNATI, O.

The study of history is always a matter of interest. There are many lines of historical research, and those pertaining to all the affairs of human thought and activity. By historical

^{*}Read before the Cleveland City Dental Society.

research and investigation we come in contact with the thoughts and actions of those who have gone before us, and this is not only gratifying, but of value more or less pronounced. Its value and importance is the more pronounced as human action and thought are embraced in it.

Eliminate all human participation, and history would be a very small matter. A knowledge of what has been thought, said and done by men in the past is of incalculable value. This is important, inasmuch as it enables us to see and understand the way and steps by which the world's present attainments have been made. It is also proper that those who have been the special agents in the world's activities should be recognized and have a place upon the records of the world's history; hence the various monuments that proclaim the doings of men from the early age of the race to the present time are eminently proper.

The aim of the present hour of this occasion is to refresh our minds, so far as we may be able, in the time allotted, with the names and acts of some of our professional predecessors—pioneers in dentistry. Only the names of those will be presented who were personally known to your speaker and probably none which reach back farther than the second decade of the last century.

Some of the names here presented are doubtless more or less familiar to many of those present, but any embarrassment that may arise because of this is removed by the title that was suggested for this hour's work by your committee, viz.: "Reminiscences of Some of the Early Dentists and Their Methods." This means a remembrance of what your speaker has seen and heard of men of our profession of the past generation.

I shall speak only of those I have known and endeavor to render a tribute to each one as shall seem fitting and call attention to some extent at least to the part each one exercised for the development of his chosen profession.

Of the noble men of former times, to whom we are so much indebted, there are three classes, viz.:

rst. Those of high mental endowment, with liberal education, men who are able to grasp, deal with and systematize principles and forces to the accomplishment of important and useful results, thereby laying a foundation upon which others might build. They were students and investigators to whom we owe very much, for what they did in the way of bringing into light many things that had previously been obscure and intangible.

2nd. Those possessing a high order of inventive and constructive ability. To such the profession is largely indebted for the invention and development of instruments and the multiplicity of appliances without which the present attainments in dental practice would have been impossible. The use and application of various modes of practice was also the result of labor and study of this class of practitioners.

3rd. This class consisted of those possessed of a high sense of humor and dignity of bearing, and with an enthusiasm, influence and magnetism that brought those noble qualities of manhood, not only in touch with, but stamped them into the life and character of those with whom they came in contact.

The line of demarcation between these three characteristics is not always clearly defined, but they are usually so well marked that their presence is readily recognized. In reference to the members of the profession of former years, only the names of those who have completed their professional career and record, and passed from the activities of this life will claim your attention for the present.

And now in the beginning of this presentation, I think the consensus of this body would be that the name of Dr. Chapin A. Harris should be placed at the head, as there is no question but that he did more for the dental profession than any other man, who has ever lived in this country, if not in the world. And so fully do I recognize this truth, that I should hope that some discussion of his early career will not be regarded out of place.'

Dr. Chapin A. Harris was born May 6th, 1806, in Pom-

frey, N. Y., and died Sept. 29th, 1860. And though dead, he still lives in what he accomplished for his chosen profession. He wrote "Harris' Principles and Practice of Dental Surgery," first edition, in 1839, the most complete work of the kind that had ever been written up to that time. He revised and put through the press five editions of this work. He also wrote "Harris' Dictionary of Dental Science and Biography." This he revised once, if not more. The latter is a large volume of some six or seven hundred pages. Another important work he accomplished was the establishment and conduct of the American Journal of Dental Science, which was issued monthly.

For the first year or two he had the assistance of three or four of his confreres. The labor connected with the journalistic work was very great. Dr. Harris was the editor-in-chief, revised all matter, wrote a large part of its articles, and translated articles from other languages. He published in the first ten volumes standard works from the English and French. The latter of which he translated from the French to the English language. This was the *first* Dental Journal issued in the world.

In 1839 he engaged in organizing the Baltimore College of Dental Surgery, which went into operation in the autumn of that year. In a notice of this enterprise published in the American Journal of Dental Science, in relation to this school the following thoughts are expressed:

"There is no good reason for the inferior rank that dental surgeons have been compelled to take in comparison with professional men. Why is the surgeon who amputates a limb, or dresses an ulcer, more highly to be esteemed than he who confines his attention to the diseases of the mouth and dental arch? Is the knowledge of the former acquired with more laborious industry? Is his skill the result of more persevering research and careful experience? Do the operations he is called upon to perform require more judgment or greater dexterity or skill than those which devolve upon the practitioner of dentistry?

"He who devotes his life to the alleviation of the suffering of his fellows, is a *respectable man;* and he who brings knowledge carefully acquired to aid in this object is a *scientific* man. It matters not whether his efforts be directed to allay a fever or remove a pain, to save a life or to render it comfortable. The object, the honor, the motive is the same, and so it should be, in regard to those who are profited thereby."

The Baltimore Dental College was the first dental college in the world. Its organization was attended by many obstacles, but Dr. Harris, as the head, and his co-workers, cleared away in a remarkable manner all these difficulties. He was the head from the time of its organization until his death in 1860.

Prior to the organization of the Baltimore Dental College the instruction available for the dental student had been very meager, circumscribed and defective. Medical colleges were appealed to in vain to assist in supplying the need. The proposition to establish a dental college was a bold one, and its execution required a courage stronger, and an ability much above that possessed by the average man. It was to enter upon an untried field—an unbroken way. There were no antecedents; the way had to be opened wholly anew. Success, the attainment of which was uncertain, would involve arduous labor and be attended with sacrifice of strength and means; the prospects of emolument were hopeless, at least to the pioneers, and failure would engulf all concerned in irremediable disaster. What then were the incentives that urged forward these founders of our special educational scheme? Nothing save the great, crying need that existedfor ignorance on this subject was almost universal, and the almost divinely prophetic vision unseen by others, that was to the comprehension of Dr. Harris and his confreres almost a reality. Whether that vision came to them in the fullness and richness of the realization of to-day, I leave you to imagine.

In Dental Society work he was always a leader, took an

active part in the organization of the early dental associations. Though travel in those days was vastly inferior to the facility of the present time, being far more expensive, laborious and tedious, yet he was always found at the meetings of these bodies. He was one of the foremost projectors of the American Society of Dental Surgeons—one of the first organizations—and at its meetings he was always ready for the performance of any work that may have been assigned to him.

His life was one of intense earnestness, great labor and application. Dr. Harris' influence over an audience was remarkable indeed. Kind and genial in manner. His thought and language well devised. Possessed of a personal magnetism he drew to him the respect and kind regard and attachment of his professional fellows. His statements were usually accepted without question. In his home he was a model, beloved and almost venerated by all its inmates. In his office he was greatly beloved by those to whom he ministered. His fellow practitioners always received, both in word and act, the most kindly consideration from him.

I now ask your attention for a few moments to one of whom at least some of those present have some personal knowledge—Dr. James Taylor, M. D., D. D. S. Dr. Taylor was born at Cedar Grove Farm, near Bainbridge, Ross Co., Ohio, in 1809, and died June 20th, '81. Much that has been said thus far in regard to Dr. Harris is applicable to Dr. Taylor.

Drs. Taylor and Harris were students together, in both medicine and dentistry. Both practiced in the same locality, and probably for a short time in the same office. They were congenial spirits and had many things in common. They both studied medicine before taking up dentistry, but after a brief period they dropped the general practice of medicine, and confined themselves to that which was subsequently their life work. They together frequently discussed the question of dental education, and considered the feasibility of establishing a dental college or colleges. They often spoke of the part that each might take in the future in such a work.

Dr. Harris suggesting and establishing a school in the east, and Dr. Taylor carrying out the same work in the west. These discussions seem now to be almost prophetic, for each was instrumental in the carrying out of the plans they had so often discussed.

Dr. Taylor took a leading part in the organization of the Ohio Dental College in 1844 and '45—five years after the organization of the Baltimore Dental College. Its arrangement and plan of procedure in its work was very similar to that of the Baltimore school.

Dr. Taylor was the dean and at the head of the faculty for many years, and at the same time one of the most industrious teachers engaged in the work. He made an impress on those who were students that they ever afterward retained. Thus did they go forward with an almost superhuman strength, influenced by a more than human impulse to the accomplishment of an untried work. He was quiet, not very demonstrative, but a man of strong character and warm sympathy. Those who were his pupils, for the most part at least continued the mode of practice which they had imbibed from his teaching and demonstration.

He was not a person who had his mind upon new devices and inventions, but when anything new was presented, he was able to judge promptly of its value, and to convert to practical use every such thing.

This has often been witnessed by those who were familiar with him. He was the first one, so far as is known to your speaker, to use silver nitrate in treatment of decay of the teeth. He was the first to publicly suggest this use of this agent, and according to his own statements, it occurred in this way: "In using silver nitrate for diseased gums, he found that when it came in contact with the teeth they were blackened by it, and that when decay was subjected to the nitrate, it was blackened in the same way. He had recognized that the darker varieties of decay were slower in their progress and his suggestion was, that the nitrate, in some way turned the lighter to the darker and slower variety of decay.

The "Dental Register of the West" was established in 1847 and Dr. Taylor was its editor for nine consecutive years.

Solyman Brown, A. M., M. D., D. D. S., born at Litchfield, Conn., Nov. 17, 1790, died at Dodge Center, Minn. '76. He was a graduate of Yale College in 1812, was a fine scholar, possessed a superior mind, polished gentleman and a writer of ability, both of prose and poetry.

He entered the ranks of the profession about 1830 and took an active part in the elevation of dentistry. He was the editor of several published works, and associate editor for the first two years of its existence, of the American Journal of Dental Science. He also wrote a poem of some 50 pages on Odontolgia, which displayed in a good degree his literary attainments. His work on prosthetic dentistry was published in the second and third volumes of the American Journal of Dental Science, and is a remarkably good presentation of that subject, considering the time at which it was written. By careful examination of this work, it will be seen that many of the methods practiced then are similar to those in use to-day, and some things have from time to time been brought up as new, which will be found in this treatise of Dr. Brown's.

About the year 1823 he embraced the doctrines of the New Jerusalem Church, and became a minister of that denomination, and at the time of his death was the oldest living minister of that church in the United States.

He was a person of suavity, gentleness and kindness which made an impression on all those with whom he came in contact.

Dr. John M. Riggs, born in Seymour, Conn., Oct. 25th, 1810. graduated at Trinity College, Conn., in 1837, and soon after commenced the study of dentistry and practiced in Hartford. He began the practice of dentistry in 1840 and continued up to about the time of his death.

He was an important factor at the time of the discovery of nitrous oxide gas for the extraction of teeth. On Dec. 9th, 1844. Dr. Riggs and Horace Wells were present at the exhibition of the administration of nitrous exide gas. Dr. Wells,

while under the influence of the gas, taken for the amusement of an audience, became greatly excited, and in his rapid movements around the room while in that state, made certain bruises and abrasions upon his person, of which he did not know. No pain being occasioned by the accident. After coming from the influence of the agent and recognizing the fact of the injuries and that without pain, he imagined that nitrous oxide could be used for the painless extraction of teeth. He therefore submitted himself for that experiment, and Dr. Riggs extracted a tooth for him after his having taken the gas. This operation was entirely painless. This was the beginning of anaesthesia by the use of nitrous oxide gas.

This operation and the circumstances attending its performance placed Dr. Riggs and Dr. Horace Wells prominently before the dental and medical profession of the world, and indeed it gave them a world-wide notoriety. Dr. Riggs also discovered a method of treatment, surgical in its character, for the treatment of certain phases of diseased gums, and especially that form of it known as pyorrhea alveolaris or Rigg's disease.

This treatment consisted in the entire removal of any deposit or foreign substance that might be upon the roots of the teeth or at their necks, and the removal of any diseased tissue in the sockets, by the use of instruments. Of course the removal of salivary calculus had been practiced by dentists from the earliest date, but no one had ventured, at least so far as is known, to perform the operation in the thorough manner practiced by Dr. Riggs. He realized results without question, that had never been obtained by any practitioner prior to his time. Very severe cases of this affection were treated by him with entire restoration to a healthy condition. By this practice Dr. Riggs also gained for himself a world-wide reputation. His method was fully communicated to others and is now a very general method of treatment.

Dr. Riggs was a man of strong character, and one highly respected and esteemed by his fellow citizens and by the dental profession. He was retiring in manner, but to those

who secured his friendship he was affable and genial. He was never married.

He died at Hartford, Conn., Nov. 11, 1883, in the 76th year of his age.

Joshua Tucker, a noted dentist of Boston, and successful practitioner in that city for about 50 years. He was born Aug. 7, 1800. At the age of 18 years he engaged in the mercantile business for a few years, after which he began the study of dentistry with Dr. D. C. Ambler, of Columbia, S. C. He continued his studies with Dr. C. Starr Brewster, of Charleston, S. C., meanwhile attending lectures at the South Carolina Medical College. After the completion of his medical and dental studies he went to Havana, where he practiced his profession for several years. Coming to Boston in 1833 he became associated with Dr. D. Harwood, and the names of Harwood and Tucker became well known, not only in New England, but throughout this country and Europe as well. In 1853, being much impaired in health, he visited Europe, where he remained two years, securing the best medical skill the great capitals afforded, but without permanent relief.

On returning home he resumed active practice, which he only relinquished about 1877.

Coming of a long-lived and hardy race, simple and pure in his habits, he fought bravely for renewed health, and was for some years before his death comparatively free from suffering.

He was peculiarly genial in temperament, and through all his suffering retained high hope and faith and looked upon the cheerful side of the vicissitudes of life. He was in all senses a lovable man, and was deeply loved and highly respected by all who knew him. He was a member of the Massachusetts Medical Society since 1838, and was president and honorary member of numerous professional societies, including the Odontological Society of Great Britain.

He died Nov. 7th, 1881; at the ripe age of 81 years and 3 months.

Dr. Elisha Townsend was eminently a man of character,

such as impressed every one with whom he came in contact. He was a man of true dignity of character and vet entirely approachable. He entered the profession about 1840 with Daniel Neal and soon became a very expert operator. He was not a man of extended education, still he was a constant attendant upon dental societies, and was largely instrumental in organizing the American Dental Association, and exercised a remarkable influence over that body during its existence. Dr. Townsend in his early days was a watchmaker and jeweler, passed from that occupation into the study and practice of dentistry. He made valuable improvements upon various instruments and appliances, especially small steel instruments. He made quite extensive experiments in the preparation of amalgam for filling teeth, and did what many others had accomplished before him, namely, found what he thought to be a very efficient preparation, but after practical test and trial he learned that it was very defective. Then he did what very few had done before him, namely, stated fairly the results he attained in the use of his amalgam, and stated through the journals that it was thoroughly worthless and advised others not to use it.

He was too honest not to make public that caution. This fact brought to him quite a notoriety. He was one of the best operators of his day in the matter of filling teeth.

John Allen, borne in Broome County, New York, Nov. 4th, 1810. He was a descendant of the Allen family of Vermont. The family removed to Ohio when John was a small boy. At the age of 19 he became a student of Dr. James Harris, a medical man of high standing, who relinquished the practice of medicine for that of dentistry. After concluding his course of pupilage with Dr. Harris he commenced his professional career in Cincinnati in 1830. He took a course in the medical college of Ohio, that he might more thoroughly prepare himself for the practice of his chosen profession. Being the only dentist in the college, it was agreed by the other students, that when subjects for dissection were obtained he should have the teeth for use in his practice. At that period the crowns

of the human teeth were very valuable for substitutes. The teeth of cows and other animals were also obtained for a like purpose. Dentures both full and partial were carved from the teeth of the hippopotamus, as porcelain had not then been brought into practical use. Dr. Allen made a number of experiments with a view of preparing dentures of the material used for porcelain teeth. He prepared single teeth and blocks, to be mounted upon gold plates. There were defects, however, in these. Although he had reached the maximum in the production of the style of work, yet the seams and fissures, the stiff mechanical appearance, and in many instances the failure to restore the natural form and expression of the mouth were serious obstacles yet to be removed. Dr. Allen, by an extended series of experiments, aimed to bring forth a new system. His first steps in this direction were to test the practicability of raising the sunken portions of the face, especially in those cases in which the form of expression had been changed by the loss of the teeth and process. This was a question he resolved to thoroughly test, and if possible, settle. The result of his efforts proved successful. He brought the subject before the American Society of Dental Surgeons and clearly demonstrated to that body its practicability. This contribution to dental science was highly appreciated by the members of that body and a gold medal was awarded him, with the following inscription, "Awarded to Dr. John Allen, for his invention for restoring the contour of the face, Aug., 1843."

The result of Dr. Allen's efforts was crowned by the production of entirely practicable dentures constructed upon platinum plates with the porcelain material then to be used for artificial teeth. In this work Dr. Allen carved out his methods and way anew, as no one prior to that time had attained success in this direction. Several years were occupied by Dr. Allen in making experiments with a view of securing greater utility and a larger range of applicability in this kind of work. He ultimately obtained a patent beyond which there seemed to be nothing desirable.

In 1853 he removed from Cincinnati to New York. In

order to fix the date of his experiments and possibly receive some remuneration for his years of toil, Dr. Allen had it placed upon the national records of the American Patent Office and also that in England, for which he received letters patent in both countries. But such was the feeling against dental patents, that he did not press his claim upon the profession, although in one or two instances he became involved in htigation in defense of his invention.

Dr. Allen, having perfected his work, confined his practice almost wholly to prosthetic dentistry. After his removal to New York he had a very extended practice in this class of work.

He received very substantial tokens of appreciation from the American Society of Dental Surgeons, another from the American Institute. In 1863 and 1867 other medals were given him. Another medal was awarded him in 1867 at the World's great Exposition at Paris, and another and more elaborate than any of the preceding ones in 1873, at the World's Exposition at Vienna.

Dr. Amos Westcott was a liberal writer and had a good deal to do with the American Journal, which was the first journal of its kind in this country and in the world.

Dr. Westcott was a prominent operator in New York. He was often before the profession as one of the strongest coworkers in the dental societies, and his labors had great results. We are also indebted to Dr. Westcott for many mechanical inventions. He established the third dental college in the world at Syracuse, N. Y., and turned out a number of graduates in the second year of its existence. The name of Corvdon L. Ford is among those of the graduates of this college, also that of Dr. Allport, of Chicago, and quite a number of others who are prominent in the profession now, or have been. In the third year of its existence, the college and all its appliances were destroyed by fire. Another dental institution was the outgrowth of it, which was established in the city of New York. Dr. Westcott was well acquainted with all the old members of the profession, and well regarded by all of them.

REMARKS AT THE BANQUET FOLLOWING THE READING OF DR.
TAFT'S PAPER.

DR. W. H. WHITSLAR: We are certainly much pleased to have Dr. Taft with us this evening. Not only in this country, but in those far distant, indeed, in every country upon the face of the earth, there are men who have received their training under the tutorship of Dr. Taft, and if they were here to-night, and would concentrate their minds on any one man who had directed them most in the paths of our profession, I think they would say it was our dear Professor Taft, and especially those who have sat under his individual teaching would refer themselves back to Ann Arbor and his influence upon them there. Now it has been suggested—I don't know but I was one of those who suggested it—that, during the meeting of this society at some time we should present Dr. Taft with words of remembrance and gratitude for what the profession owes to him, and I have been chosen to be the one to speak these words. I thought that I might fail to state them just as I wished, so I have written what we have to say and I will now read them.

PROFESSOR JONATHAN TAFT GREETING.

The members of the Cleveland Dental Society, on this first day of April, nineteen hundred and one, offer this slight token of our appreciation to our esteemed brother, Professor Jonathan Taft.

Be it Resolved, That by his christian character, wisdom and ability, together with his untiring devotion to the uplifting of the dental profession, he has endeared himself to each of us individually and we hereby take pleasure in expressing to him these sentiments of respect.

The committee has caused these resolutions to be placed upon parchment paper and 46 members of this society have signed them. We have also prepared a frame to fit this parchment and shall present the whole to Dr. Taft as a slight token of our esteem for his greatness and goodness.

I desire to add one word more, and that is that sixteen years

ago, when Dr. Taft gave me my diploma which gave me authority to go out into the world to begin the practice of dentistry, I felt the blood mount to my head and my heart go pitty-pat from the joy I felt at receiving it from him. Therefore I feel highly honored to-night that I have been chosen to present this bit of paper to him.

DR. TAFT: Mr. President and Members of the Cleveland Dental Society: I hardly know what to say to this presentation. It is truly a very great surprise, for verily it is such. I cannot, however, do less than express my very great appreciation for the regard expressed in this document, and I certainly appreciate that which it represents. It would be ingratitude if I did not.

It would certainly be very gratifying to me were it possible for me to make some equivalent for this manifestation of regard from those with whom I have had more or less intimate relation in the years gone by.

This Society has occupied a large place in my estimation ever since its organization, because I so well knew its members and knew they were loyal to their profession, and full of zeal and earnest work for its progress and maintenance. This is the object of association work throughout the land—to lift up the profession.

I feel that I am hardly worthy of such illustration of regard as is here manifest. I only wish that my work had been such that I might feel that I was in a goodly measure entitled to such regard.

For one to feel that he is more highly appreciated than he deserves is not always a pleasant position in which to be placed, but the past is gone and its shortcomings and mistakes cannot be remedied. I will with more intense interest look forward to what this Society accomplishes in the future. You have splendid opportunity here for effective work. Avenues have opened up to you that are not available to many others. The profession in this city is a united band of professional brothers, harmonious in all they do, and all striving for the best results.

You have an institution in your midst, educational in char-

acter, which you should ever sustain to the extent of your ability. Whenever practicable, let this be of a material or financial character, but more than this, let both this Society and your college have the moral support and good will of every member of this body and every honorable member of the profession in your city and vicinity.

What would our profession be to-day, if it had not been for organizations like these. The coming together of men to secure the advancement of dental knowledge has made the profession what it is to-day. There have been and are other sources of power, but association of effort has been one of the greatest. Prejudices have been cleared away by it; men have been bound together by its ties, and they have learned that their greatest power lies in labor, perseverance, harmony and good will. By this means, more than any other, have animosities and prejudices of former days been cleared away. Our dental schools, without question have aided in this work, but nothing, in my estimation has done so much as associative work.

I am glad to know that the Cleveland Dental Society is the peer of any similar institution in the country. I know of no local dental society with superior advantages to those enjoyed by its membership, and very few are so well cemented together, and so well realize the value of association as you.

The results that will be wrought out here and in like organizations are operative not only for the present, but for the future, and perhaps for all time to come, as long as our profession shall exist.

Gentlemen, you have my heartfelt thanks for this kind testimony, and my hope and desire is that your Society may live and prosper, so long as there may be work for it to do.

DR. OWENS: Before making my particular remarks, I wish to say that to-night our Society has its red-letter day. I think we are greatly honored by having Drs. Taft and Palmer with us as our guests. I regard them as the greatest exponents in dentistry now living. While I had not the honor of listening as a student to Dr. Taft at Ann Arbor, yet I was his student, and I think there are many of the older dentists who claim

him as their teacher as well as myself. Next to Dr. Chapin Harris' "Operative Dentistry," the book placed in my hands by my preceptor was Dr. Taft's "Treatise on Operative Dentistry," and I think it helped me more than any one book to give me a clear idea of what I was to do. Dr. Palmer has set a type of operating before us that has been the ideal for those who desire to do good and beautiful work, and the standard set will continue for all time. Recently I saw one of his patients, and in his pride this patient told me that the work which Dr. Corydon Palmer did for him twenty-five years ago was as good as the day it was inserted. It was a careful piece of work, in a position that would necessarily require skillful hands, and it was as firm as the Rock of Gibraltar.

Dr. J. F. Siddall, of Oberlin, was called upon at the banquet for remarks. He responded by saying he had been requested to produce something in the line of poetry, but had found himself unable to reminisce in rhyme. He had nothing later than the Monkey Song of two years ago, but had written of a little incident that had occurred in the early days of the N. O. D. A. We were all experimenting in those days, and our meetings were largely experience meetings. Hitherto we had generally been working in secret and keeping our methods to ourselves, fearing that others might know as much as we did if we talked too much. Dental societies changed all this. We came together to contribute, each of us, the little we could bring in exchange for what we were able to learn from our associates, and I need not tell you it was next thing to "getting something for nothing." The mite that any one could bring was so meager compared with what he could carry home with him as to make him feel he had "struck it rich"; and it is just so to-day. No young man, "up to date" though he may consider himself, can afford to be out of fellowship with his brother dentists. If a young man, or an old one, either, comes to think he is so far advanced that it is not worth while to attend dental societies he will soon be left behind like a milestone. But for my story. At one of our meetings, away back in the fifties, Dr. M., a seedy looking man with a cracked voice and jerky manner, apparently

a stranger to most if not all of us, arose and with a rather important air and a good many unnecessary words, stated that in a number of cases he had extracted an aching tooth and driven a little tack in the apex of the "fang," or of each "fang," as he called them, and replaced the tooth in its socket and in a few days it was all right; and he would "warrant" no more ache to that tooth!

This was more than 40 years ago, and was a little in advance of the times, especially for a man of no reputation; but we may often learn from such. I know it gave me a hint of what might be done where teeth had been accidentally knocked out. In a few cases I have "tacked" such teeth and replaced them.

Well, we had with us in those days a little Scotch Irishman by the name of Spelman, broad shouldered and wide out in every way; a man of a good deal of ability, especially in a "scrap," always awake, and liable to hit somebody or something in a spot the least expected. After a few gestures, pulling down his vest, ramming his hands in his pockets, spreading out his feet, etc., peculiar to the man we knew so well, we were all agog to know what was coming. Getting a good ready, he began in a very earnest and serious manner (assumed with a twinkle in his roguish eye): "Mr. President, I arise to suggest that in view of the gentleman's remarks, and the generous way he has let us into his discovery, we take some action in regard to the matter. I think we can all see at a glance that this simple method of relieving suffering humanity, and at the same time saving the teeth, is a boon unsurpassed by any discovery of the age. only wonder is that none of us have thought of it before. man's invention is an epoch in dental science, and his name is destined to go down to future generations never to be forgotten. I foresee from this day the country doctor, the blacksmith, and the barber, all allies of the dentist, extracting teeth and mailing them to you and me, to be tacked up at the root end and returned for replacement. I think I shall advertise at once and extend my business to all the outlying districts. Thanks to vou, Dr. M., for this discovery." At first Dr. M. looked pleased and then puzzled; but as Spelman waxed eloquent and began

to rub it in on him his countenance changed, and having fully caught on to the doctor's irony, he whispered to me as I sat by his side. "Who is that little dam'd fool, and what does he take me for?" At the close of this the monkey song was called for, being a take-off on evolution, beginning:

I wish we all were monkeys,
As our fathers were of old,
Just how old Darwin knew so much
We've never quite been told, etc.

ending up with a petition to Darwin to "give us back the tails."

DR. THWING: I am glad to be here to-night. The relation of the Western Reserve University to the dental profession is an intimate one. There are at least five purposes which the Western Reserve University has in her heart, through the gaining of which she wishes to help this profession. She desires to train for this profession those who are scholars. She desires to train as dentists those who, through knowledge, have gained the power of judgment; who have the sense of values; who are able to say that two and two equal four, and never three and never five. She also desires to train men who in their profession are artists; who shall not simply do work that is honest, but that is beautiful. And with these two aims, the Western Reserve University, through her professional schools and her under-graduate colleges, wishes to train up men who are gentlemen; who have the power of appreciation of other people's goodness and character; who win the respect of others and respect others as they do themselves; who desire, in their communities, to stand for the best things that make for human betterment. The Western Reserve University also wishes to train men in the old but ever new fashion of simple manliness. She wishes to make men—those who are not merely eager to make a living but also to live a life. My dear old friend whom we used to call "Billy Russell," who became the governor of Massachusetts, and who after he became the governor was still "Billy Russell to all of us, once said to the men of Harvard College, "Fellows, there is a great deal of difference between making a living and making a life." This University wishes to train men who shall not only be able to make a living but who shall be able to make a life. The scholar, the thinker, the artist, the gentleman and the man—this is the five-fold force that Western Reserve University, through her own professional schools and the school of dentistry in particular, wishes to give to the world. This gathering bears witness to the truth that the University has given to the dental profession men of this character.

Dr. Butler: I think the hour is so late and we have already had so many good things that it is hardly wise to bring on the inferior wine at the last of the feast, but I would like to say just a word with reference to our friend, Dr. Taft. He said in his reminiscences that he has not spoken of any one but those who had passed beyond this vale of tears and struggles. Now, I have had a sort of notion that it did not do a man any harm if he was earnest and honest and showed us good things to say so while he was living. The idea of piling ever so many flowers on the grave of a dead man! They may be ever so sweet, but how much of that sweetness comes to him? Now, if he is worthy and has done us noble service, I am just stubborn enough or egotistical—I don't care what you call it—to say so to his face. It is said that it is a good thing to tell children when they have done things well, and, again, if they need correction, to punish them. And I don't know why that doesn't apply to older children. We ought to have great respect for Dr. Taft. He has been before the profession for years. Not only in Ann Arbor, but also in Cincinnati, before he went to Michigan—and the college at Cincinnati was the second college of dentistry in the world—and it was his service in that college that made him in demand at Ann Arbor. Some of the very best work he has done was here in Ohio, and I am proud that he was an Ohio man—I don't believe in taking any second place as a state, in dentistry, either, and we have had some fine men, but Dr. Taft was one of the best. We have had some noble and useful men and I might name over a few of these who are Ohio men and who have been leading authorities—men who were pioneers in dentistry and whose battlefields were in Ohio. But the privilege of naming such was given to Dr. Taft.

I saw Dr. Taft at one time when he was more embarrassed than he was to-night. You may hardly think that a man who had talked before all kinds of audiences and on every subject in demistry, a man who had stood in many places before intelligent audiences would be frightened anywhere, but I remember seeing him in London, when, much to my surprise, he seemed to be —well, a good deal in the condition we call "scared." It was at the International Medical Congress, and, by the way, if you would see the manners which those foreigners assume, their spreading of hands and bowing, and so much "Mr. President," etc., etc., you could understand what his feeling was, and yet it was rather surprising that a man like Dr. Taft should be embarrassed in their presense, for he was the equal of the best men there and had no reason to be afraid of any one. But he just stood there and stammered like a scared schoolboy, but after awhile he got over it and made a nice little speech. And a good talk we had, for he always sticks to his text well. One thing I have always noted about him and that is he likes to have the last word. He always waits to see what the rest have to say and then at the last he knocks the pins out from under the arguments, and down they go-you hardly know how.

I was one of the men who happened to be present when that little incident between Spelman and that genius occured. Spelman was a man who would get on the off side of a question just for argument, or to draw some one out, and he was always attempting it. There have been many things said here to-night to draw one out and it is a good feature. If there is any good in us it ought to draw it out, and if there is any evil in us it ought to wash that out, and lead us to see how much we can better ourselves.

Dr. Corydon Palmer: I feel greatly gratified that I am able to be here to-night. I look around me and see many friends, and I am sure that Dr. Whitslar has more than done me justice. I feel that he has complimented me too highly, but I may say this to you,—that I have nothing to say as far as any new thing is concerned, but as I live rather in the past than present I may talk in that direction. In looking over the report of the last national

meeting. I noticed that reference was made to restoration of the features by artificial pieces, and as is possibly known to some of you, in the early part of my career I turned a good deal of my attention to that specialty. I was pleased to know that it had been brought up at the meeting and favorably commented upon, and I should like to show you a little piece that I have here. At the last meeting which we had—the one at Saratoga, Prof. Barrett was very much interested in a conversation he and I had about a piece of work of this kind that I am now wearing, and he requested me to allow him to copy it and I did so, and I have the copy here now, the exact representation of the piece I am now wearing, which is a piece of delicate workmanship, so i will ask you to handle it carefully. You all know that Dr. John Allan was the first man to advocate doing something to bring out the features aside from the simple plate that would hold the teeth. He was the one who first proposed this mode of treating this, and he made the first application of the method in his own mouth, and it was a remarkable piece of work. There had been, in Dr. Allan's case, great recession, and it took a great deal of fullness to bring out the features and it was done by putting extensions upon the sides of the walls. Now, taking Dr. Allan as my friend and talking with him about his attempts in this line and knowing what he had done and being engaged upon the same subject myself, I endeavored still further to perfect this work, so as to represent in form every part. You must understand also that when the teeth and the alveolar surroundings are lost, it makes a great change in the face, a shortening of the whole length of features of one or one and a half inches sometimes, so changing them that they are no more like the originals, and changing the mouth so that it is no longer like a musical instrument, adapted to modulate and give tone to the voice, and its sounds become uncertain; so it is necessary to reproduce the exact form that has been lost by the absorption of the processes. Now in my efforts I have endeavored as nearly as possible, by extensions, to make up in form the lack of form that has been lost by absorption and waste of the processes about the teeth. In almost every instance there is want of extension upon the sides

of the pieces that will carry out the sunken features. When I had shown Dr. Allan my work in which I had endeavored to carry out the sunken features and the depressions upon each side of the nose, and carried the pieces well down to give play to the muscles, and extended them well back upon each side, he said to me that that was all right, but I must not make any coving or make any under-turning underneath like coving, because that was contrary to the natural form, and I want to say that should be avoided, the work being finished so as to give it a rounded form on the underside, not making any curves or overhanging parts, or it will be likely to give whistling sounds. I feel glad of an opportunity to say something about this because I have devoted a great deal of time to this, and made a great many models which I used to take with me to exhibit at the societies in the early times, but now newer ones are coming in and think they have discovered it all over again.

There is a growing danger which I wish to mention also this evening and that is the tendency to tumors of the mouth. are meeting with these cases frequently now, and if my long observation and experience are worth anything. I wish to urge you to watch carefully every mouth that you handle that no rough places are left to cause irritation. Especially those who in making additions of gold for lengthening the incisors, for you know it not infrequently happens that you elongate both inferior and superior incisors and when these surfaces come together they soon bruise a little, leaving sharpened edges, and you should watch these cases carefully and not leave any such roughness, for fear it may bring on one of these bad cases. I have had some of these cases in my own practice where I did not know whether they occurred from this cause or not, but taking families where there is a hereditary tendency to these troubles, a very little thing might irritate the lip and bring on one of these terrible disorders.

I think inveterate smokers are more liable to tumors of the tongue and mouth than those who do not smoke excessively. I am glad of the opportunity to speak of this, and I wish to urge every practitioner to be on his guard against

leaving any sharp angles that may cause irritation. I wish to speak of these things because I am passing on, and if my experience is worth anything to others, I wish them to have the benefit of it. You most of you know that, aside from my desire to be known as a fine operator, that my contribution to the design of and perfecting models of the teeth and fine instruments that my designs have always been placed in the best hands for reproduction. I shall probably never undertake anything more, for I am now in my eighty-first year, and although I can do everything now that I ever could-my nerves and hands are as steady as ever-yet I don't feel like standing up to the work as I used to do. But I wish to speak of my last effort, which is a design for an instrument to put holes in rubber dams without removing the rubber from the mouth. There were to be three sizes of instruments, the best suited to all purposes, and the advantage of them was that they were to have long blades that would reach out and take in the fold without impinging upon the folds of the rubber, so that you can operate without removal of the dam if you wish to add other holes in the dam. I have one of the instruments here which will give you an idea of what the others are like—I have a beautiful set of them which I showed at the meeting at Saratoga, but I did not bring them. I offered them to White's and they declined reproducing them unless especially ordered, and now what I would like you to do is to urge them to put these instruments on sale if you like them. They can do it if they think them salable, and if you ask for them they will see that you want them. They have my models and could reproduce them if they were encouraged to do so. Now, if you think enough of the instrument I wish you would do so.

I wish now to say just a few words about fine operating. There are advanced methods of manipulating nowadays, electricity and all kinds of new appliances and new ways, but for my part I have confined myself always to the use of the hand mallet ever since Dr. Atkinson introduced it, and I use it with my own hands. I wish to encourage you to make your fine operations, as those upon the incisors, with your own mallet

in your own hands. If there is any place where you wish to do a fine operation it is upon the incisors. The walls are thin and you wish to preserve as much of the tooth as you can, so make your operation as far as possible from the lingual surface and use a mallet, being careful not to put too much force upon it. I do not like to try to put the most cohesive gold there. I am using what I like very much, a soft number four, and you can use this against these thin surfaces with less danger. I think a great deal of injury is done in the start by using too much force in the gold because it hardens quickly, and I would recommend the softer forms where you wish to do fine work. I am not partial to anyone's gold foil, but I think I prefer Ney's soft No. 4, because you can make it cohesive by annealing if you want to and it is safer to use. Now there has been one thing in the way of making fine, delicate operations, and that is that you are liable to use instruments that are too heavy and too long, and besides they are too far away-you must get closer to your work than a heavy, long instrument will allow you to do, so you should always use light instruments. Use a short, light instrument and a mallet—Dr. Butler and myself were the first to make a mallet like this. Here is the first one that was ever made probably, and it dates away back into the sixties and have used it myself ever since. It is the first mallet handle ever made that will not turn in the hands, and I consider this the most perfect design that was ever made. I have furnished the Whites with a perfect model of it and urged them to make it, but they have not done so. If you want them to furnish them to you and you will ask them for them they can reproduce the design. So I would urge you in delicate operations to use short, light instruments, get close to your work, learn to use both hands, the left just as well as the right, and do not use too much force in putting in the gold. I want to touch upon one little thing more, for it is out of these little things that our best is made up. In filling an incisor, after you get your tooth properly separated and the cavity prepared, begin near the portion of the cervical border to fill it by first making a minute little pit at one angle of the

cavity. Don't make a hole as large as a darning needle—just a nice little delicate pit. Then the instrument you put the gold in with should be so formed that it comes down to a clean point, squared at the tip and laid down with the burnishing tool to a nice edge. This is a fine little instrument to put the gold in with and will not bruise the work as a heavy tool will. I have often heard it said that you should take soft foil to put in there, but this is a mistake. Form your foil into a suitable shape and anneal it, and then insert it and fasten it down, leaving a portion of it standing out, which is equivalent to setting a pin or a screw. Now earry that over the cervical border, and before you leave it, lay it down with a burnishing tool along the border, else when you get away from it you cannot reach it to finish it up. That is where fillings most fail, in lack of care at this point.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

FUSIBLE METAL USED IN ARTICULATING MODELS.*

BY DR. H. C. WETMORE, ST. JOHN, N. B.

My method of procedure is, briefly, as follows: Take a plaster impression of the teeth which are to articulate, with those of the denture to be constructed. It will be found advantageous, although not absolutely necessary excepting in the more difficult cases, to first lightly coat the teeth with oil or other lubricant. It is not at all necessary to press the impression material so as to obtain the imprint of the gums or even the entire length of the teeth. The cusps and over-bite of the anterior teeth are all you really require, and by con-

^{*}Extract from Dominion Dental Journal.

stantly bearing this in mind you experience no difficulty whatever in removing the impression without fracture in all ordinary cases. Should a fracture occur, the parts can be replaced and held there with a little moldine. If the teeth are isolated it will be necessary on removal of the impression to connect, by grooves cut in the plaster, or by the addition of a little moldine, the imprints made by each so as to enable the fusible metal to unite them when the model is being poured. Grooves cut in the impression have been found to be very satisfactory and they require but a moment in construction. There is no need to wait for the impression to dry out; the model may be run immediately after the impression is removed from the mouth. All that is necessary is to hold the surface of the impression a few seconds in the flame of a Bunsen burner and as soon as the metal is ready, pour. The best temperature at which to pour will soon be learned by experience; the metal should be first heated until entirely fused and then allowed to cool until it reaches the consistency of a stiff batter. In this state it may be built up until the model is quite thick, if for any reason such thickness is desirable. As soon as pouring is finished dip impression and attached model in water and pry apart, and a perfect model of the cusps and part of the natural teeth is the result. Should there be any ragged edges to the model, these may be trimmed with a hot spatula. Five minutes will be found sufficient for the entire procedure, including the mixing of the plaster, which time will be found considerably less than is necessary when wax or composition is used, and even then the model is not sufficiently hard in the latter case to use without fear of chipping or abrading the cusps, for some two or three hours.

Metal models will be found particularly advantageous in two special classes of cases. In the construction of temporary dentures, where little, if anything, can be gained by trying in the wax plate with the teeth attached, and where, I think, the usual practice is to proceed without doing so, after using the most extreme precautions in taking the bite, and in securing a good articulating model, and in certain repair cases—rush

jobs—when one or more teeth are to be attached to a denture. and where the articulation is so obvious that it is unnecessary to put the case in an articulator, provided a correct articulating model can be secured. An accurate articulating model can be made of fusible metal, say in five minutes; in ten or fifteen more the teeth to be added can be properly ground and articulated, and the case is ready to be flasked and vulcanized in a space of time which would be an utter impossibility did we have to wait for a plaster model to harden sufficiently for working purposes before proceeding. In these days of active competition every dentist has to make the most of his time and opportunities if he hopes to maintain his place in the race in which most of us are struggling, and I claim that any process which promises greater dispatch, combined at the same time with greater accuracy than the methods previously in vogue possessed, and which requires no more, if as much, skill in application, is at least worthy of a consideration and a fair trial. That we possess in the process of making of articulating models of fusible metal both of these features needs. I think, but a fair trial to convince even the most incredulous among us.

ADAPTATION OF PLATES.*

BY E. J. PERRY, CHICAGO.

I take the impression in plaster, using warm soft water with a pinch of salt; selecting a tray approximately the size of the ridge, so that a minimum of plaster may be used. The ridge should not cut through the plaster to the tray, the plaster should not be too thick, and the mix should be smooth and free from lumps, so that in carrying to place it will not push nor displace the tissues. When in place, the patient should swallow, and with the free hand you must press gently the lips and cheeks, so that you get a true copy of the frenum and

^{*}Extract from article in Dental Digest.

muscles attached to the ridge. A perfect model of the mouth is desirable. Varnish first with thin, clean shellac; when dry, then use sandarac. Mix the plaster for the model with great care, beat it well, not too thin, but quite thick. Place a portion on the top of the impression and gently coax or jolt it to position, thus avoiding bubbles and securing a model of even density, and if the impression has been varnished properly a smooth, glassy surface results. Now mark the plate line at the heel, and after reference to the chart previously made, deepen the model on either side of the median line. This is the only place where I change the model by trimming, and the only treatment I give the model until after the case has been flasked and separated. After the rubber has been packed carefully, place over face of model a bit of thin cheesecloth, preferably the layers of cloth which come between the sheets of pink rubber; this has a paste on it which, when placed against the rubber, draws away easily. Close the flask with a press in boiling water slowly, so as to give the rubber time to run, and close clear down. Now separate; take out cloth, and if any of the surplus has been forced into the vent, and you feel sure by other indications that you have sufficient rubber, take chart, and where relief is desired use No. 20, 40 or 60 tin foil on the median line at the juncture of the two halves of the maxillary bones. I use 40 or 60, or on the tuberosity perhaps 20. Cut pieces and press to place, then burnish them closely to the model. Next paint these surfaces with library paste or mucilage, and press these pieces of tin foil to place. Now paint the whole model with paste, and carefully burnish No. 10 tin foil on the whole, close flask, and do not open again until after vulcanizing. This produces a beautiful surface, and I believe a stronger rubber. Of the adaptation I know. I use the same principle in swaging gold or platinum plates, simply by cutting out pieces of 60 tin foil where I wish to relieve the hard areas. Of course if the model is not deepened the relief by adding tin foil makes a desirable difference, as this alone will drop the plate into the softer areas so much the harder, but I find it insufficient.

though I deepen the model where the mouth is soft. I use no air-chamber, so-called, whatever; my whole study is simply to equalize the pressure of the denture, with special reference to the density and thickness of the membranous cushion which covers an irregular surface of bone called the alveolar ridges and arch.

A METHOD OF MAKING AN ACCURATELY FIT-TING PORCELAIN CROWN.*

BY J. MOUNTFORD, L. D. S., ENG.

The object I have in this method is to obtain an exact copy of the root face in gold foil, to roughly fit a hollow porcelain crown to this and to a platinum post, then to fill up the space between foil and crown with porcelain, and at the same time to unite crown and post securely together. The modus operandi is as follows:—

When it is possible allow the root to remain a little above the level of the gum, except on its labial aspect, where it should be cut down just to the gum line, or a little beyond. If the root face is made slightly concave I think it is an advantage. The root canal should be enlarged just the size of the post it is intended to use; no more should be cut away than will allow the post to be readily withdrawn. For posts I always use wire pin size, as this seems to entail less cutting away of tooth substance than any other. For enlarging the canals of bicuspid roots I always use Girdwood reamers in a right angle attachment. I was only able to obtain two sizes of reamers from Messrs. Ash; the smaller size I find very useful, but the larger size is much larger than I ever need, so I had a special size made about intermediate between the two, which I find large enough for all purposes. Perhaps I may be allowed a momentary digression to mention what I think should be the relationship of the post to the canal. It appears to me that the

^{*}Extract from article in Jour. Brit. D. Asso.

post should be in close contact with the walls of the canal at two points at least. These should usually be at the lingual wall at the apical end and at its exit from the canal against the labial wall. The post is thus placed in the direction of greatest strain against an unresisting structure. The drawing shows what I mean. To return to my subject, the root is prepared and the canal enlarged, a platinum post is now taken and fitted to the canal, and the crown end is bent to a right angle to form a rough kind of head. I do this by grasping the terminal sixteenth of an inch of the post in the joint of a rubber dam punch, squeezing the wire to flatten it, and then bend the post to a right angle with the flattened portion.

The length of the post is all important, as it is better not to remove it from the model afterwards. If the post is the proper length it will be found when it is pushed home in the canal that the patient on closing his teeth together will not touch the rectangular portion with the opposing teeth by 1-32 of an inch or something a little more. I endeavor to gauge this distance very accurately, as it is the chief means I use of taking the bite. The post is now removed from the canal and a very small piece of Gilbert's gutta-percha is stuck on the head. I now take a piece of gold foil, No. 30, slightly wider than the root, allowing for the concavity, but sufficiently large labially and lingually to extend 18 of an inch beyond the root. The root is now dried, the foil placed in position, and perforated over the canal. The post having had the small piece of gutta-percha softened is now passed into the canal, and the gutta-percha is pressed on the foil and around the post to fix them in their respective positions. The foil is then carefully burnished to the root face with amadou, or what promises to be better still, chamois leather. This being done, the impression is completed with gutta-percha. On removal from the mouth, the four angles of the foil are turned up in order that they may be held securely in the model. This is east, not in plaster of Paris, but in a mixture of this and fine silex, as I fire on the model. The model, on being drawn, will clearly show the root face on the gold foil. The crown is now roughly let down, the two points

to be noted being the direction and the height as shown by the adjacent teeth and the length of the post. The model is now dried, and the porcelain body is packed in and the firing process is commenced. In porcelain crown-work the greatest strength is attained when the point of vitrification is reached. Consequently the body should not be fused, but the surface merely glazed. I always fire three times at least, and generally a fourth time, as I think it best to add the body little by little to avoid spaces being left. The first time I merely fill the concavity in the foil and fire without the tooth. For the second firing I smear the body on the base of the crown and place this on the foil. If the hollow is completely filled for the first firing, the crown is lifted up bodily and consequently the bite is raised. After the first firing with the crown in position I cut away the adjacent teeth, as by this means the body can be better packed at the sides. The body I use is much higher fusing than that frequently used for inlays, as I believe it makes a stronger crown. Moreover, I have found with a very low fusing body that it "stars," and not infrequently the cracks extend into the crown, which is fatal. It is a very interesting problem why it does this, and one I have not at present been able to solve. It would appear that the ratio of contraction and expansion are not the same, or that they do not occur at the same time. I shall be glad to hear from those who have had experience with porcelain crowns whether they have noticed this, and, if so, how it can be explained. When the crown is finished, all that remains is to remove the foil and trim the edges.

It is hardly necessary for me to say that a crown when heated must not be touched with a cold steel instrument. I do not hesitate to take the model and crown out of the furnace when red hot and place it on the top to cool more quickly.

I find each firing takes about six minutes in a Mitchell furnace—not that I recommend a time test; our eyes should be trained to learn the heat required. By this method I am able to obtain a better fitting crown to the root direct than any other way. I can also say after a lengthened experience that the crowns are perfectly reliable for strength. Should breakage occur, it is not necessary to remove the post from the root, as a new crown can be readily fixed with osteo and amalgam.

Perhaps the greatest service of this method of crowning is in those cases where the root is decayed considerably below the gum line. The root is usually built up with amalgam when this condition exists. In my hands the method above described appears to answer much better, and I am not troubled with the loosening of the crown after short service, as I have been where I used amalgam.

In making a cap crown for a bicuspid I use hard platinum No. 3, for the band, and soft platinum, No. 3, for the top, the reason for this being that I can readily burnish the soft platinum to the root face, which is always slightly concaved. The impression is taken with gutta-percha and the model cast in plaster and silex, the crown roughly fitted, then the post is soldered to the cap with pure gold, and the firing process is completed on the same model.

BRIEFS.

Condensed from Contemporaneous Literature for Ohio Dental Journal.

A SUPERIOR MOULDING COMPOUND.

BURT OGBURN.

Take equal parts by weight of marble-dust and emery-flour. Mix thoroughly; then add glycerin instead of water, and the compound will always be ready to use. In casting zinc dies the above will be found superior to marble-dust.—Dental Brief.

AN ANTIDOTE FOR CHLOROFORM POISONING.

After about two thousand experiments on animals, English investigators have decided that dilute hydrocyanic acid is the

quickest and most efficient antidote to chloroform poisoning. A full dose should be dropped from a drop-tube on the back of the tongue.—Journal of Medicine.

A TOOTH WASH FOR CHLOROTIC PATIENTS.

Dr. Max Kahaue recommends the following:

Tincture of benzoin, tincture of rhatany, of each, 1 ounce. Mix.

Rinse the mouth thoroughly before and after meals, using one dessertspoonful of the mixed ticture in a glass of warm water, and swallowing a little.

ANTIDOTE FOR COCAINE.

C. GROVE.

I want to suggest an antidote for cocaine which it is well to bear in mind. I have had considerable experience in treating patients whose dentists have injected cocaine for dental work. In a number of cases there were bad results—syncope, etc., and in every case I have used gelsemium, and had excellent results.—Med. Visitor.

SADDLE BRIDGES BECOME FILTHY.

Dr. Low says that even in the little saddles the soupy portions of food would crowd under and form deposits of filth and diseased mucous membrane. He had a very early experience with saddles. His preceptor made a small saddle plate some years ago, and Dr. Low had to extract a tooth to get it out; and the filthiest breath he ever knew from any man's mouth came from the deposit under that saddle.—Cosmos.

TO PREVENT BUBBLING IN SOLDERING.

Dr. Sangster, Sackville, asked questions as to soldering and burnishing the backing. In the matter of using flux he said he had no trouble with bubbling. He used a solution of borax. He cut the solder up and dropped it in a little dish like a watch face. Then he picked it out and let it dry when there was enough borax on it to make a flux, and no bubbling.—Dominion Journal.

REMOVAL OF TOOTH ENAMEL WITHOUT PAIN.

H. HARTMAN.

Removing the enamel should not cause any pain worth mentioning. By placing a short piece of rubber tubing, which fits tightly around the tooth well up on the gum at the neck of the tooth and leaving on over night, so that the gum may be pressed back, the enamel may be removed quite painlessly without even causing the gums to bleed.—Dom. Journal.

TO REMOVE TEETH FROM RUBBER PLATES.

T. F. CHUPEIN.

The plan which we have found which leaves tooth and pins absolutely free from all adhering rubber is to place the old plate in a sand bath. This may be done in a clean ladle and placed over the Bunsen burner in the chimney. The rubber will be all burnt off while the odor of burning rubber, which is anything but pleasant, escapes up the chimney. When the rubber is all burnt off there will be a powdery residue around the pins which is readily brushed off with a stiff bench brush.—Off. & Lab.

A HINT ON PORCELAIN CROWN MAKING.

F. J. CAPON.

There is one difficulty in making porcelain crowns for bicuspids; the deep sulci in these teeth weaken the crown. The only way is to have the crown go down below the margin of the gum; in this way you get sufficient bulk of porcelain to give the required strength. My method is to make what I call the cup crown. A porcelain-worker will scarcely be at a loss for means to replace lost crowns beautifully and durably, and can save many teeth that a gold-worker would have to sacrifice.—Cosmos.

TO KEEP ROOT AND GUM DRY WHILE CROWNING

Dr. Jones's method of keeping the root-canal as well as the end of the root and surrounding gums dry after he has prepared them for a crown is as follows: After wiping out and drying with hot air, warm a piece of Gilbert's temporary stopping and press it over the end of the root and the surrounding gum, thus perfectly sealing it up. He knows that when this is done the tooth will be as dry when he returns to it as when it was closed up. He can take his time to mix his cement, and need not worry for fear of moisture.—Cosmos.

CARE NECESSARY IN LIGATING TEETH

G. V. BLACK.

It is very necessary to be careful of the gingival margins when preparing a root for a crown. A ligature tied around the root of the tooth will lame the peridental membrane for months, and is liable to lame it for all time. The gingival margin does not run straight around the tooth, and if it is forced down to make room for a ligature the peridental membrane will be so lamed that the tooth will not be used as it should be, but will be spared on account of the pain its proper use would occasion.—Cosmos.

HOW TO RETAIN GOLD COLOR IN TIN AND GOLD FILLINGS.

A. HUGENSCHMIDT.

Fillings of mixed tin and gold—one of tin to six of gold—will retain permanently the color of Roman gold, a pale greenish tint, by laying a sheet of tin on three of gold and covering with three more of gold; Abbey's non-cohesive Xo. 4 and White's tin-foil Xo. 4. Cut in four or five strips, and then in suitable lengths, rolling between the fingers to form cylinders and avoiding exposure of the tin. In finishing the filling, burnishers must not be used or the color of the tin will be brought out. Simply polish with an instrument of copper or wood, with pumice powder. This must be done immediately, or the filling will become permanently dark.—*Revue de Stomatologie*.

PREPARING ROOTS FOR RECEPTION OF RUBBER DAM.

A. P. BURKHART.

The rubber dam can be employed in the preparation and setting of a Richmond or shell crown, provided the tooth or root to be crowned is ligated the day preceding the beginning of the final operation. A double floss silk ligature surrounding the neck of the tooth will press the gum back, and thus enable one to press the rubber dam and necessary ligature well up under the gum to permit filling the gold band or shell crown. Before adjusting the rubber dam anesthetize the gum surrounding the tooth or root to be crowned, because the floss silk which has surrounded the tooth has created tenderness. Having adjusted the rubber dam, prepare the root and complete the operation in the usual way. By this method accuracy, cleanliness, and perfect cementation are obtained.— Cosmos.

BANDED CROWNS THE STRONGEST.

Dr. L. Meisburger, Buffalo, thought porcelain crowns had a decided advantage where an inexpensive crown was needed, or where pathological conditions were such as to render permanency of the operation possible, but the banded root was so much stronger than it was without the band that he always favored banding. In using the Logan crown with a band or cap over the root there is an advantage, because in case of a break a new crown can be adjusted without interfering with the band or crown that is already in position. He did not think it necessary to use rubber dam in preparing a root for a crown. Napkins will keep the root dry, and will save trouble to the dentist and annoyance to the patient. He considered the Logan crown more desirable than a porcelain baked crown, as the latter is liable to present a bulging appearance.—Cosmos.

ANCHORAGE OF BRIDGES.

C. A. MURRAY.

I have seen bridges where they are anchored in adjoining teeth by means of filling either of silver or gold, and were the first to show signs of weakness or failure. It is impossible to suppose that a crown approximal cavity of fairly good proportions can support the strain of mastication that is exerted on one or two additional teeth when experience teaches that fillings in similar positions and of similar dimensions often break down by the force exerted upon them. There is always a certain amount of movement to the teeth to overcome, and the security that this mode of anchorage affords is not sufficient, and either the filling loosens or the bar becomes detached; but this class of work in some cases has been successful where the occlusion is slight or wanting. There are also other cases where one or more dummies have been extended from the bridge proper, forming levers that multiply the natural occluding force, and which no support can withstand the pressure.—

Dominion Journal.

BRIDGE RE-CEMENTED WITHOUT REMOVAL.

E. S. LAWTON.

A lady presented herself three months ago wearing a bridge, one end of which, consisting of a crown attached to the second right superior molar, had become loose through the gradual disintegration of the cement while the remaining fastenings remained intact.

I at once decided to re-cement this crown, if possible, without removing the bridge, and proceeded as follows: First, I drilled a hole through the cap of the crown to exactly fit the point of the syringe to be used, when I introduced a stream of warm water, which was continued until everything was washed out clean. I next injected hot air, until both tooth and crown were dry and warm, when the crown was pulled down from the tooth as far as it would come, and the cement forced in with a Siqueland cement syringe until it appeared at the gum margin, when the crown was immediately pressed into place and the operation completed.

I requested the lady to report to me at the end of three months, that I might again examine the case after the lapse of time. She did so, and I found everything in perfect condition.

The hole in the crown was filled with gold, and was apparently as good as ever.—Items.

AN EMERGENCY CROWN.

Dr. L. C. Jones, Wolcott, described what he calls "emergency" crowns. Dr. Jones said it frequently seems imperative to prepare and place in position a crown at a single sitting, and in such a case it is annoying for a dentist to find that he has not in stock a crown that will answer the purpose. In such a case he selects from his tray of rubber teeth one that will answer to use as a porcelain facing, and cuts from German silver wire a piece long enough for a post, one end of which he files to a point, the other he flattens and notches to go between the pins of the facing. With a pair of pliers he presses the pins of the tooth to the notches of the wire-post to hold the two together. When the root of the tooth has been prepared he places the pin and facing in position, holding it with his left hand, while with his right he presses some softened wax around the post, the pins, and over the end of the root. This gives him a correct impression of the end of the root with the crown and post in their respective positions; that is to say, the positions they will occupy when finally mounted. He now removes the piece altogether, trims off the surplus wax, and invests it in plaster of Paris. As soon as the plaster is set he pours boiling water on it, letting the water fall twelve or fifteen inches, which soon washes the wax out. He makes very sure that it is strictly clean. He now places the investment over the fire for a few minutes to dry the surface, and then puts two or three drops of soldering fluid on the metal posts and drops on this a small piece of fusible metal. With a blast from the blow-pipe the fusible metal flows; waiting a few seconds till just before it crystallizes, with the moistened end of the thumb he presses hard upon the metal and forces it into all the spaces. All that remains now to be done is to cut away the plaster, file and polish the metal into shape, and the crown is ready to mount. It fits the emergency, and hence the name, Emergency crown.— Dental Cosmos.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

Cotton-wool,, soaked in oil of turpentine and pressed into the bleeding cavity, after tooth extraction, will check the hemorrhage promptly.—Med. Summary.

ANTIDOTE TO STRYCHNINE.—Remember that lard given internally is quite an efficient antidote to strychnine, and it can be found in every house-hold.—Journal of Medicine and Science.

CEMENT FILLING PROTECTOR.—Dr. Daboll uses a chloroform solution of Canada balsam as a varnish to protect cement fillings for the first few hours after insertion. It allows the cement to harden thoroughly.

LABORATORY FOR RESEARCH WORK.—The Medical Department of the University of Buffalo is in receipt of a gift of \$50,000 for the purpose of erecting a laboratory to be devoted entirely to research work. It will be known as the Gratwick Research Laboratory.—Med. Age.

THE FOOD OF PREHISTORIC MAN.—Our attention has recently been called to some curious experiments conducted some time ago by Mr. Charters White, M. R. C. S., lately the president of the royal odontological society of Great Britain. Upon examining some skulls dating back from the stone age, he noted that several of the teeth, although quite free from caries, were thickly coated with tartar. It occurred to him that it would be possible by a rough analysis to identify any particles of food that might be embodied in this natural concrete, and so reveal the character of the aliment partaken of by prehistoric man. Dissolving the tartar in weak acid, a residue was left which, under the miscroscope, was found to consist of corn-husk particles, hairs from the outside of the husks, spiral vessels from vegetables, particles of starch, the point of a fish tooth, a conglomeration of oval cells probably of fruit, the barblets or down, and portions of wool. In addition to this varied list were some round, red bodies, the origin of which defied detection, and many sandy particles, some relating to quartz and some to flint. These mineral fragments were very likely attributable to the rough stones used in grinding the corn. This inquiry into the food of men who lived not less than 4,000 years ago is a matter of great archæological interest.—Chambers's Journal.

OHIO DENTAL JOURNAL.

Vol. XXI.

SEPTEMBER, 1901.

No. 9.

CONTRIBUTIONS.

PORCELAIN AS AN ART IN CROWN-WORK.*

BY F. J. CAPON, M. D. S., D. D. S., TORONTO, CAN.

Porcelain is quite recognized as a substance which has come to our aid as an ideal material for the replacement of the lost crowns of teeth in conspicuous places; it has the required strength, and when applied with a true sense of art, gives results that please the operator, the patient, and deceive the public.

Too many crowns are made (either gold or porcelain) that do not pretend to fill the interdental space, which is a source of great annoyance to the wearer.

For any of the six anterior teeth and more particularly if the patient be a lady, then it is especially desired that the festoon of the gums be kept in a perfectly healthy condition that no one should surmise the artificiality, then a semi-band is indicated rather than the entire band, which is very apt to interfere with the nice results required at the labio-gingival margin, causing irritation, resulting in recession or congestion; thus we are forced to admit that bands of the neatest character are more or

^{*}Abstract of paper read before the Tri-State Dental meeting, Indianapolis, Ind., June, 1901.

less liable to this condition. For many years this style of partial banding has given me very great satisfaction and might say have never had one return with fractured root.

ROOT PREPARATION.

The root preparation for a crown of any style is an important step; many failures may be attributed to improper preparation. The face of the root is ground to a wedge shape following the gum line without wounding the soft tissue; remove the remaining ledge of enamel, and with an Evans trimmer cut the edges of the root just under the free margin, making the face of the root more of a cone than a wedge; enlarge the canal to receive a tapering square iridio-platinum wire, the depth of the canal is marked on it, then it is pushed through a disk of platinum a little larger than the face of the root, and soldered at the mark with pure gold or platinum solder; with a flat-faced burnisher work the platinum disk down to the face of the root, carrying the burnisher well along the edges, which will be defined on the platinum; remove and trim away the surplus, leaving sufficient on palatine half to form the band, which is turned approximately to line of root with fine nosed pair of pliers; replace it on the root and burnish it again until the platinum lies snugly to the face of the root and the banded portion closely in position.

MAKING THE CROWN.

The facing for the crown having been selected, it is ground to nicely fit the labial surface and stand in its proper relation, the pins are bent to touch the head of the post and facing kept in position with hard wax; it is then removed from cast, invested, and soldered with the minimum amount of pure gold, or better, platinum solder. If a surplus is used in soldering, it will cause porosity in the porcelain, which is detrimental to the strength, appearance and finish of the crown; this necessitates that in all porcelain work, it is essential tht all the metal parts to be united should have absolute contact, and any surplus end of dowel or pins should be ground off and made round or void of sharp corners. High grade bodies should also be used in crown-work, the higher

the fusing point of the body the stronger the crown. The great amount of glass bodies used by those seeking low fusing point, have done much to depreciate artistic work, as these bodies have caused a succession of failures in both crown and inlay work.

The work of applying the porcelain body is the final step; this should be done with clean surroundings; a fresh towel or white paper spread upon the bench or table, and any work going on in the laboratory that would create a dust should be stopped; these precautions will insure against minute particles of carbon settling and leaving tiny black specks on the finished porcelain surface. I will mention Closes' as being one of the higher grade bodies that has stood the test for years with satisfaction. By holding the crown (to be) in tweezers or pin-vise, the porcelain is thoroughly worked down into every crevice; by rapping the tweezers the moisture is brought to the surface and taken up by old linen, bibulous or blotting paper. After this has been thoroughly done it is in the proper consistency for carving; sufficient body should be applied to allow for this and for the shrinkage, it being necessary to hold the contour and shape of the crown in the first baking.

Now the work is ready to be placed at the mouth of the muffle and gradually heated up until it can be put completely into the furnace and subjected to the full degree of heat. After cooling in a tempering-oven it can be adjusted in the mouth on the model and properly occluded, noting where contour or cusps are necessary, which are built up and carved in the body, dried again and placed in the furnace for the final baking; as a rule two bakings are found sufficient for this class of work, but sometimes a flaw or mistake will necessitate a third baking. The crown is finally finished by sand-papering the edges and any necessary polishing.

The crown just described can have a full band or cap if the case demands it. No better crown could be suggested for a man, but for a lady the half band is ample for all the requirements with a more esthetic appearance; and after many years, I have no reason to regret their use where properly indicated.

CROWNING BROKEN-DOWN TEETH.

In those roots that are badly decayed below the margin, and possibly filled with fungus growth, one may grasp at the remains to build on a crown for esthetic effect alone. When these cases present themselves there has been such extensive loss of toothsubstance that hypertrophied gum is overhanging the edges of a root which has been extensively invaded by the progress of caries. In such cases the root form is to be restored sufficiently to furnish a good base. It is often necessary to cut out the fungus growth and after applying powerful antiseptics to the gum and the cavity of the root, temporary stopping is packed in to free the interior of the root and its edges from the overlying gum. The root is brought to a condition of assured health, and the apex of the canal sealed. It is now required to restore the root form by means of a rigid and insoluble mtaerial; good amalgam is best adapted for this purpose. If the edges are easily accessible, the root can be dried, the canal cleaned and tapped for the reception of a gold screw-post; after placing a small piece of cement on its extremity it is screwed into place. The root is given an undercut if possible to aid in retaining the amalgam, which is packed about the pin, over the face of the root to form a slight cone. If the root is a fracture or decayed considerably below, then a matrix with an apron to take in the extent of fracture is required in which the amalgam is to be packed. The flow of blood is invariably bothersome at this point but can be nicely controlled by using adrenalin chloride as a stiptic and cocaine as an anesthetic. The size of the band or tubematrix can be obtained by packing a small cylinder of moldine over the root face; while the moldine is in position a small impression-tray filled with the same material is used to secure and withdraw the mass covering the root face. Into this impression a fusible-metal cast is run, on which the matrix of German silver is adjusted, fitting the root accurately. If the root is that of a bicuspid or a molar, one on which a collar crown is when placed, the matrix is made deep enough to grasp the end of the root firmly and to extend about an eighth of an inch above the margin of the gum. If a tube-rown is to be used it is finished

to the gum margin, leaving the screw-posting projecting. After twenty-four hours the matrix can be removed by splitting it with a hatchet excavator, and Rhein files passed down between the gum to remove any rough edges of amalgam. The matrix in some cases is made of thin platinum and allowed to remain, covering the amalgam wass. In either case the external edge of amalgam can be ground down to suit the kind of crown desired.

To obtain the tube for the crown, wrap a piece of thin platinum around a piece of similar posting (round or square), remove the tube and place it on the dowel head; with a disk of soft platinum, No. 35, somewhat larger than the face of the root; make a hole in the centre of it and force it over the tube which is in position on the dowel head; with a pair of sweezers pinch the torn flanging edges (of the hole) against the tube, remove the tube and disk together and solder with minimum amount of platinum solder. Now there will be a tube and disk instead of the dowel and disk.

The surplus tubing is bitten off at the length of the screwpost, and the procedure of the balance being the same as the former crown.

THE CUP CROWN.

The "cup" crown for bicuspids and molars is made with or without a dowel as the case demands. The root is prepared as for any banded crown, but when no dowel is used a little more tooth tissue should be left for retention at the palatine aspect.

A platinum band (which for porcelain should always be beveled and lapped at the joint) with plenty of width is made to fit the root accurately and festooned so that it will not lacerate. Whilst in position on the root, scratch with a pointed instrument on the inside of the platinum band the line of the root, also the gum line on the outside of band. With a pair of fine-pointed scissors cut the buccal half of band to line of the gum, place the band on piece of platinum No. 30 and the shape of the band on it for the palatine two-thirds, trim and file accurately to the mark and fit it to the line on the band; now tack it in position with platinum solder, after which the remaining part of the

apron may be pressed down to the buccal portion of the band and the solder complete its course around the band. Trim off the surplus and file the buccal edge rounding which allows of a better extension of porcelain on the band. If a dowel is to be used it can be adjusted and soldered in its proper relation at this stage. The extended portion of the band is contoured if necessary and the crown proceeded along the same line as the former ones; if a dowel is used the pins of the facing are soldered to it, if no dowel the pins are bent down and soldered to the cap or floor of cup.

The band projecting above the face of the root forms a "cup" in which the porcelain has its base and gives the additional strength required for mastication, the liability of fracture of porcelain being reduced to a minimum. The facings of these crowns give little cause for anxiety as they are made of "block" body, the entire surface of which is etched to the body of the crown; it is soldered as well. This style of porcelain crown can be used to serve as abutments of gold bridges as they have a soldering surface.

DISCUSSION.

Dr. J. E. Nyman, of Chicago: The essayist makes a strong appeal to the artistic side of our practice as a profession. He is endeavoring to restore natural conditions, and to do it in such a way that none can detect the art. It is this that makes us a profession. It is only as artists that we give anything to the world. The idea of building a crown without mutilating the gum, and of such form that it harmonizes with its environment and preserves the interproximal space is the work of an artist and not the mechanic only. Illy-fitted crowns cause diseased conditions of the gums and are pernicious. Esthetic crowns give pleasure to the patient as well as comfort. The preparation of the root end is important, as the essavist says. Many dentists destroy the soft tissue by unnecessary mutilation with instruments; care should be exercised in using disks to grind the periphery of the stump, as the abrasive material works into the soft tissues and can not be removed except by suppuration and loss of valuable structure. I have used with great satisfaction Dr. A. G. Johnson's enamel cleavers. I trim the stump end below the gum margin by burring out with a round bur the root, being careful not to touch the gum, then take a sharp chisel and cut down the thin peripheral margin to the desired point.

I do not believe it is good practice to trim a stump down close to a live pulp; it is much better to devitalize and remove the pulp, and then trim the stump to the best advantage.

The character of the work will determine whether to use a full or partial band. In some cases the partial band will suffice. I sometimes make partial bands for bicuspids, more often for incisors.

The post should not be too long. In most cases it serves no good purpose. It should be only long enough to be firmly secured in the tooth substance.

In selecting colors for crown it is not always best to match adjacent teeth, but corresponding teeth in the same jaw, and avoid getting shades too light.

For investment material I have had excellent success with Brophy's investment compound; it stands the fire better than any I have used. Don't pour boiling water on any investment to clean out wax, as it will ruin the investment.

I have recently been using Brewster's body with great satisfaction; it is strong and high fusing and can be nicely polished. Distilled water should always be used in mixing body to prevent discoloring.

Dr. H. J. Goslee, of Chicago: The essayist has given us a good paper. I would suggest a slightly different stump preparation than that which he gives and which is generally used. I would allow the lingual side of the stump to stand as much as practicable above the gum margin, and cut the labial side sufficiently beneath the gum margin to hide the joint and all metal. Then I would cut off the stump on a straight line from the labial to lingual preparation, giving to the end a straight bevel instead of an angular one as usual, with the angle at about the position of the post. My preparation gives

good support to the crown and makes it much easier to manipulate the materials used. It is a good idea not to dress the stump end as much as necessary until the peripheral preparation has been made, so as to avoid lacerating the gum unduly.

Porcelain crowns are much stronger than soldered metal and porcelain crowns, for the reason that no metal crown is stronger than its weakest part, which is the two small pins baked into the porcelain. Porcelain crowns are more artistic, as they can be made to harmonize with their surroundings. Some facings will change color in the high heat necessary to use porcelain, but there are makes which will not change. I usually use a full band for stability, although a partial band may be used where a special emergency seems to demand it, and where the strain upon it will not be excessive.

I don't agree with the essayist's method of burnishing the cap material down upon the sides of the stump to form a band. I much prefer cutting out and soldering a band of heavier material than the cap.

Should I encounter difficulty in retracting the gum from the root end, I make a temporary crown with a vulcanite tooth and a German-silver post soldered with soft solder and insert it with gutta-percha and have the patient wear it a few days, and it will then give perfect freedom for manipulation.

In making bicuspid crowns, instead of making the cupshape band of the essayist, I solder a strong post on the cap behind the facing where the lingual cusp is to be placed; this will prevent this cusp from being broken off in mastication.

I prefer to use round or oblong posts, as the porcelain material can be packed around them easier.

PORCELAIN CROWN WORK.*

BY DR. H. J. GOSLEE, CHICAGO, ILL.

In crowning the six anterior teeth the very objectionable feature of a metal backing extending to the incisal edge, which

^{*}Demonstrated at Tri-State Dental Meeting. Indianapolis, June, 1901.

completely deprives the facing of its translucency, is overcome; as is also the occurrence of those dark blue lines along the joints between facing and backing due to the penetration of secretions, which objectionable and unhygienic condition is so often noticeable. Together with these advantages do we also reduce to a minimum the possibility of the facing becoming fractured in the mouth, because where the facing and backing are used the porcelain is retained to its backing simply by means of the attachment pins, while in the porcelain baked crown the facing is retained not only by the pins, but also by the etching or fusing of the "body" over the entire surface. This combined attachment makes it practically impossible to have the facing break away without all of the porcelain coming with it, which seldom occurs. Hence in point of relative strength there is no comparison, aside also from avoiding the display of any metal.

The bicuspids are particularly ideal indications for the porcelain crown, because of the simplicity in their construction and the difficulty of making any other style that would not entail much more effort and show more or less gold, and because of the frequency with which we here see the unsightly gold crown, which practice in the face of our present opportunities for concealing the artificial I now regard as almost criminal.

ROOT-PREPARATION.

The requirements here are similar to those for any style of dowel crown with a band, excepting that all roots must be cut shorter because of the necessity for making as much space as possible for the porcelain, thus attaining the greatest degree of strength in the finished crown.

In sacrificing the remaining portions of the natural crown, however, they should first only be cut down to within about one-sixteenth of an inch of the cervix or gingivæ until the remaining ledge of enamel has been removed, the measurement taken, and the band fitted; each of these steps then being greatly facilitated by having this surplus or projecting end of the root to work upon, after which it may be cut down on a line with the gingivæ.

In dismissing the patient, however, after finishing this portion of the operation, the precaution should always be observed of packing temporary stopping into the canal and allowing it to cover the end of the root, so as to prevent the tissue from crawling over the exposed edge during the interim, as this often interferes with the permanent setting of the crown when completed. Where the crown is for an anterior tooth it is a good and most satisfactory practice to make a temporary one to be worn while the permanent one is being finished. This consumes but a few moments' time, or only long enough to select a facing, grind it to fit approximately, fit a German-silver post to the canal, and soft solder it to the facing; then mount with temporary stopping. The gum is kept back nicely, and the patient is not subjected to the usual temporary disfigurement.

BANDS.

The fitting of the band is of course very important, but is rendered more or less easy by leaving the root as described until this step has been accomplished, as it serves to conform it to the proper shape and guides it into place. In pressing it into position it should be so trimmed as to meet the gum line evenly at all sides before passing under it, and should be as narrow as possible to meet the requirements; but, being narrow and in order that it may possess strength, no thinner than twenty-eight gauge pure platinum should be used.

If pure gold be used for solder, a lapped joint should always be made, which precludes the possibility of its opening under the influence of expansion, which precedes the shrinkage, in the subsequent baking. Where platinum solder is used the joints may be butted.

CAP.

The metal used for the floor to the band which forms the cap should be preferably of thirty-two gauge platino-iridium, in order that the cap may possess every available strength sufficient to permanently retain its shape.

POSTS.

In the preparation of canals for the reception of posts care should be exercised to avoid enlarging them any more than is absolutely necessary. The post should be proportionate in size with the root—sixteen gauge (B. & S.) for centrals, cuspids, and molars, and eighteen gauge for laterals, bicuspids, and all of the lower anterior; and should be of platinoiridium, in order to be stiff, rigid, and unyielding. They should extend into the canal a distance nearly equal to the length of the crown, in order to overcome the force of leverage. Should fit at least two walls closely, and in passing through the floor of the cap should be placed far enough to the lingual so that the surplus end may not interfere with the facing in its adjustment to proper relation with the cap. A square or triangular post is preferable, because of overcoming the tendency to rotate on conical roots, and for the reason that a wire drawn with sharp angles is more rigid than a round one.

FACINGS.

The selection of facings should be made very carefully, so that as little grinding as possible may be necessary. In point of color a very slight tendency to the darker is advisable, because they sometimes bleach just a trifle in baking. The neck of the facing should be ground very thin so as to overlap the cap, for the reason that it is desirable to bring the neck in close contact with the gum and to cover the labial or buccal surface of the band with porcelain to avoid or prevent its showing in case of recession. If this joint between the edge of facing and the cap be smooth and continuous it will be found that the tissues take very kindly to it, and seldom present those evidences of irritation and inflammation so often apparent. The main object in overlapping the facing is to securely anchor the body in the joint when fused, for in this connection it must be remembered that there is absolutely no physical union between the porcelain and platinum; and when it is desirable to fuse porcelain over the surface of platinum, to be retained permanently, mechanical means, such as etching or roughing, etc., must be resorted to.

The facing must always be soldered to the cap in order to secure the combined strength of this attachment together with that of the porcelain in fusing. In the six anterior teeth the pins must come in contact with the surplus end of post at a point as close to the floor as convenient, in order that they may allow as much room as possible for the body and in no way interfere with the contouring of the lingual surface of the crown. In some instances they may even be brought into direct contact with the floor and soldered.

In the bicuspids the same general details apply, together with an additional important consideration, which is that while the porcelain must be securely anchored to the metal construction, it must also be supported against stress and cleavage. Hence it is here necessary to add to the metal parts a support for the mass of porcelain which is to form the lingual cusp. This is obtained by a simple vertical bar soldered to the center of the lingual portion of the cap, extending about one-half way to the occlusal edge of the facing; or it may be an extension of the lingual post if two posts are used. The end of this extension, however, must always be nicely rounded, or, acting as a wedge under applied force, it will prove an element of weakness instead of strength.

SOLDERING.

In the attachment of the various parts of the metal construction for single crown-work absolute contact of the parts to be united is essential, and when the facing is being soldered the entire lingual surface should be freely exposed in the investment. Pure gold can then be used with every assurance of a strong union, even after baking. Only enough, however, should be used to make the joint, and it should be well and thoroughly fused that all surplus may become absorbed by the platinum, so as not to remain in globular form to melt and become absorbed under the porcelain during the baking, which invariably causes a porosity.

Platinum and gold solders in various percentages are being extensively used now with a view to uniting the joints with a solder which is not melted at the fusing-point of the body.

Such is an advantage in bridge-work where the shrinkage of porcelain materially affects the relation of the parts, but is not necessary in single crown-work. After the soldering has been completed the crown should be subjected to the acid bath, then washed clean in order that no particles of borax or investing material remain to interfere with the vitrification of the body. All sharp angles of metal should then be nicely rounded with a disk, as the body will not fuse smoothly over them, and they will prove an element of weakness.

I use the ordinary continuous gum body, which vitrifies at from 2200° to 2500 F., which, because of its superior quality and strength, is the only material I regard as possessing the necessary qualifications for general use. Before using it, however, it is necessary to put it in the mortar and pulverize it much finer, as it cannot be nicely manipulated and carved until this has been done. When reduced to a finer consistence it works, carves, and fuses most beautifully, and no doubt will ultimately be prepared for use in this shape and designated as crown and bridge "body." At the present, however, these bodies do not come to us in any variety of colors, so it becomes necessary to depend entirely upon the facings for such.

Prior to building up and carving the work should be fitted on a fire-clay support which will hold it securely and firmly and sustain a perpendicular position, as this is very necessary and can be more easily done before the porcelain is added than afterward, when it should be handled but little.

MUMMIFYING PASTES.*

BY GEO. B. SMITH, D. D. S., FREMONT, OHIO.

Prof. Adolph Witzel is no doubt the father of pulp amputation, with mummification of dead remnants. As early as 1874 he devitalized the crown portion of pulps by means of arsenic, extirpating that portion, leaving the pulp in the canals

^{*}Read before the Toledo Dental Society.

undisturbed, their exposed ends being treated as freshly exposed pulps. This was also the method followed by Herbst, except that he employed cobalt, or native arsenic sulfid, instead of the tri-oxide.

The transactions of the World's Columbian Dental Congress contain an article by Prof. Miller, entitled, "Concerning Various Methods for Obviation of the Necessity of Extracting Dental Tooth Pulps," in which, while he recognizes the greater value of complete root filling, he advises for general practice the removal of only the bulbous portion of the pulp, and covering over the remaining portions with a tablet composed of slowly dissolving antiseptics, such as sublimate and thymol combined. The distinguished author confesses that teeth so treated, invariably give trouble if the victim lives long enough, and we see no reason why teeth so treated should not give trouble, the bi-chloride being too powerful an agent to leave permanently in the canal, also causing change of color of the tooth, and most important, the lack of desiccating power. Desiccation is one of the principal factors in pulp mummification, and must surely be accomplished, or the operation will be a failure. The withdrawing of moisture has in one sense a when there is complete desiccation, chemical activity and when there is complete dessication, chemical activity and decomposition are entirely eliminated from the case. This is the advantage, I believe, in Dr. Soderberg's formula, which I have used for nearly five years. The formula being as follows:

Dried Alum	I	drachm
Thymol	I	drachm
Glycerol	I	drachm
Zinc Oxide, q. s. to make stiff paste.		

This formula has been published extensively, as have many others, but none others, I think, have its advantages. Some contain iodoform, formaline, etc. One man from Chicago says of his paste that if you make the nerve bleed, and if you press the mummifying paste hard enough on the nerve so it hurts, and if you use amalgam over it—his amalgam in front

teeth—the whole pulp will be put to sleep with only possibly a slight soreness.

What are the essentials of a perfect mummifying paste? Soderberg gives them as follows: (1) It must contain an antiseptic strong enough to prevent decomposition taking place while the mummification sets in. (2) It must contain an ingredient which will, as quickly as possible, cause the drying and shriveling of the pulp tissue. (3) It must contain a substance which in conjunction with the other ingredients, will impart a white color to the mummified pulp, and prevent discolorization of the tooth. (4) It must contain an agent capable of binding the whole together in a pasty state, and making it penetrate deeply and quickly. In his paste, the thymol acts as the antiseptic; the alum is the mummifying agent; the zinc oxide is the coloring medium, and the glycerol as the penetrating and binding agent.

We will notice that the three ingredients—dried alum, glycerol and zinc oxide—all have marked affinity for water. Especially happy is the selection of glycerol, whose preserving and desiccating properties, together with the fact that it makes the paste easy to work, and when coming in contact with the warmth of the tooth, may be easily worked into the root canal. Dr. George Weld, of New York, in the December Cosmos, writes as follows: "The mummifying agent, to be effective in the root canals of the teeth, must be powerful enough to quickly coagulate live animal matter, and declares Soderberg's combination wholly ineffective, as it is only mildly escarotic, and not sufficient in strength for the purpose."

I do not believe that the coagulation of the albumen is the only thing wanted in the case, especially chemical coagulation. In fact, I should think it would retard the absorption of the mummifying agent. I especially avoid the use of any but mild escarotics on the exposed ends of the pulp, simply washing out the debris with alcohol, and always making sure that the ends of the pulp tissues are exposed to the application of the paste. The pulp mummified, or rather, with its albumen coagulated with formalin, does not shrink like one upon which alum, glycerol, etc., have been used. It may be said

that this space caused by the shrinking pulp is undesirable, not so desirable perhaps as though the pulp were removed and the root properly filled, but remember, we are doing the best under the circumstances, and you can depend on the space remaining aseptic just as long as the fluids of the mouth and the air are excluded. And at the same time, the shrinking and drying of the pulp tissue obviates one of the main objections that could be raised against mummification, namely, that if the pulps have been devitalized by arsenic, the minute quantities of arsenic remaining in it will eventually cause the death of the peridental membrane. In this case, the pulp tissue, shrinking from contact with the walls of the chamber, is thus isolated and the medicaments it may have absorbed.

That the mummification of the dead remnants of the nerves of teeth will have a place in the future dentistry, I do not doubt, and that many of the posterior teeth may thus be saved, that would otherwise be consigned to the forceps, I think must be granted, but whether it is thoroughly desiccated pulp tissue, or embalmed tissue that will remain quiescent the longest, I do not believe has been fully determined. If it is embalming or coagulation we want, formalin, zinc chloride, etc., ought to do it, but if it is desiccation, alum, glycerol, zinc oxide and calcium chloride are in line. We all know that dried beef is a permanent form of preservation for that article, while embalmed beef has a very doubtful record. That Soderberg's formula will desiccate, shrink and preserve, I know by experimentation, both in the mouth and out of it, as I have many teeth with mummified pulps of four years standing, never having trouble in a single case in which I applied the paste directly to the recently devitalized pulp tissues. I have also applied it to pulps, the pulbous portion of which I had removed by cocaine, using no arsenic, but found them quite sensitive to thermal changes for several weeks, and would in all cases advise the devitalization with arsenic, as the dried alum, being a powerful astringent, would cause pain, and as also these remnants of pulp tissue would probably remain alive—Prof. Witzel says he has found them alive after ten vears—there is always the danger of their death as with ordinary capped pulps, possibly after the mummifying pase has lost its effectiveness

CLINICS GIVEN AT TRI-STATE DENTAL MEETING. PORCELAIN INLAYS.

BY DR. E. E. REESE, INDIANAPOLIS, IND.

An impression of the cavity is taken in oxy phosphate cement, in which has been incorporated a little soap-stone. Soapstone is dusted in the cavity also, before the cement is applied, to facilitate the drawing of the cast after it has hardened. The cast is reinforced with cement and imbedded in plaster. The matrix material is then swaged over the cement cast and imbedded in investment material. A porcelain tooth of the correct shade is then selected, pulverized and used as the body for the inlay, and fused into the matrix. The inlay is then set and finished in the usual manner.

A METHOD OF MOUNTING AND TRUING WHEELS FOR ENGINE AND LATHE.

BY DR. GEORGE B. PERRY, CHICAGO, ILL.

Truing carborundum wheels by means of a diamond is effectively accomplished by the method of the clinician which is as follows: Select a screw top mandrel such as is suitable for the stone, place melted sealing wax on the thread of the screw, pass screw end through wheel and screw into the shank. The sealing wax is used to hold the screw tightly in the shank so that no matter which way the lathe is turned the screw cannot loosen.

Get the wheel as true as possible before the wax hardens, then cool and fix in water. The mandrel, with wheel attached, is now placed in the lathe and the wheel is further trued up by means of a diamond set in a steel shank.

REMOVAL OF EXCESS CEMENT IN SETTING CROWNS.

BY DR. S. D. RUGGLES, PORTSMOUTH, O.

After the crown is ready for setting, take a wooden toothpick with a tuft of cotton wound around one end, and smear the cotton with a little vaseline. Draw the vaselined cotton around the outside of the band fitted to the crown, and proceed to set the crown in the ordinary way with cement. The vaseline prevents the cement sticking to the band so that any surplus may be lifted off with an explorer or other fine-pointed instrument. In this way all of the surplus cement is gotten rid of and no particles are left to irritate the gum margin and cause inflammation, etc.

COMBINATION FILLING AMALGAM AND GOLD AT THE SAME SITTING.

BY DR. J. W. CLARK, LOUISVILLE, KY.

The operation consisted of filling the cavity about twothirds full of amalgam, filling over this with DeTrey's gold, which uniting with the amalgam formed a perfect union and solid filling. A matrix was employed and held tightly in place on the tooth by means of soaped ligatures.

ROOT DRIER.

BY DR. H. P. CARLETON, SAN FRANCISCO, CAL.

This invention consists of platinum wire on asbestos fibre enclosed in a glass tube, and fastened in plaster. The air is thrown through the tube over the heated platinum and regulated as to temperature by the amount of air used.

PORCELAIN CROWNS.

BY DR. C. E. REDMON, PERU, INDIANA.

In making this crown no band is used, but the root is concaved mesio-distally. A platinum disk is then burnished over the face of the prepared root and a pin is soldered to the platinum disk. A porcelain pacing is secured and soldered with pure gold. Fill in the back with Head's porcelain body and shape and fuse. A round file is used in the engine to shape the root and one need not remove the enamel near the gum when making this style of crown.

NEW FORMS OF SCALERS.

BY DR. C. R. BUTLER, CLEVELAND, O.

These new instruments cover a wide field of usefulness in the treatment of pyorrhea alveolaris. They are especially adapted to the many extreme cases, as from the length and size of the blades all surplus metal is taken away from the line of vision. The instruments also facilitate the work that has to be done through the sense of touch. They were all designed and constructed by the doctor himself.

FILLING TEETH WITH IMPROVED TIN FOIL.

BY DR. H. L. AMBLER, CLEVELAND, O.

Dr. Ambler showed that with his own make of cohesive tin foil, a filling in any cavity in any tooth could be made one solid mass from base to surface, so that if the filling was removed, by breaking the tooth, it could be put on an anvil and forged out flat without breaking in pieces. After partly filling a cavity he burnished the surface, then built on more tin so firmly that is could not be pried off. This foil is more tenacious, cohesive, and makes a harder filling than any similar foil. It is used entirely for technic work in a few dental colleges in place of cohesive gold, because it teaches the use of tin and cohesive gold at the same time, as the tin is manipulated with the same instruments and hand mallet as used for cohesive gold.

CARVED CUSP FOR GOLD CROWN.

BY DR. J. E. NYMAN, CHICAGO, ILL.

A practical method of making solid cusps for shell crowns consists of moulding the cusp in modelling compound to conform to the opposing tooth, then securing a mould in moldine and casting a cusp of scrap gold.

ANTISEPTIC FLOSS TOOTHPICK.

BY DR. J. W. COWAN, GENESEO, N. Y.

This floss toothpick is designed to remove particles of food from the spaces between the teeth, and to clean and sterilize those surfaces which the toothbrush cannot reach. The appliance consists of a hollow metallic case about the size and shape of a small penknife, the upper and lower parts being hinged together. A five-yard ball of floss silk, saturated with an anti-

septic, is sealed in small glass vials. Each vial when in use is held removably in place by a small spring clip within the butt end of the case, and a spring wire frame, adapted to hold a section of floss securely between its arms, mounted pivotally in the forward end of the case. When it is desired to operate the device, the case is opened, the spring frame turned outward, resting in an opening in the end of the casing, and the cover closed, thus holding the frame in operative position. Successive lengths of the silk as desired are drawn through a slit in the cork which seals the vial, and out through the same opening, and wrapped two or three times into the little hooks on either end of the spring frame, thus providing a taut section of silk which may be easily forced between any of the teeth. When the silk has been exhausted the empty vial is slipped out of its position, thrown away, and a fresh one substituted. When not in use the case is opened, the spring frame folded inward and then closed again, thus protecting the silk and frame from dust, etc., while being carried in the pocket.

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

A FEW LITTLE POINTERS.*

BY STEWART J. SPENCE, D.D.S.

Here are a few little pointers, none of them of great importance; but as "many a little makes a mickle," they may, considered *in toto*, be worthy of perusal.

To wax together a Broken Vulcanite Plate.—A dentist often needs three hands; for instance, when he essays to wax together the separate parts of a broken vulcanite plate. Two hands are necessary to properly hold the denture. My third

^{*}From article in Dental Brief.

hand, or assistant, is in the form of a device which holds the wax over the denture until it melts, then lets it drop. Take a bar of metal about one-twelfth of an inch thick, and solder to one end a small spoon-shaped piece large enough to hold as much wax as is ordinarily employed in waxing together the broken parts of a plate, and while the other end of the bar is stuck into a hole in the table, or held by a vise, let this spoon-shaped end be arched forward so as to rest about three inches above the table. Make a hole in the bottom of the spoon about one-twelfth of an inch in diameter. Into this little spoon place the wax. Then set an alcohol flame under the bar at an inch or two from the wax, so that the heat will creep down the former to the latter. Soon it will melt and drop. The broken plate can thus be held steadily by two hands resting on the table.

To bend a Crown Post without Strain on the Crown.—Grasp the post with a pair of crown contouring pliers. The convex jaw of the pliers forces a portion of the post into the concave jaw, thus bending it.

To varnish the Insides of Cavities without touching the Margins with the Varnish.—Use an instrument having a swollen end—either bulbous or fan-shaped. The little tool used by jewellers for oiling watches answers the purpose. It works on the principle of attraction. The swollen end holds by attraction the drop of varnish, thus preventing it from running up the shank. To further aid in this, do not dip it deep into the fluid. When touched to the tooth, the superior attraction of the larger body causes the liquid to leave the instrument and spread itself in the cavity.

To readily reach the Posterior Teeth to inject an Anaesthetic.—The ordinary syringe needles are too short for this purpose. If made much longer, they are too frail and break. I obtained of Krath Bros., of New York, a long, thick needle, reinforced all its distance by a removable sheath. It was rather too long, and I reduced it to about three inches. I then inserted into the end of this thick needle an ordinary-sized needle-point about half an inch long, soldering same to place. Thus you have

a long and strong needle, capable of reaching well to the dentes sapientiæ, and yet fine-pointed.

An Instrument for carrying Absorbent Cotton into Root-Canals, for the purpose of drying or to apply Medicament.—If you use for this purpose a barbed steel wire, such as the Donaldson cleansers, it is difficult to afterwards remove the cotton from it; and if you use such an instrument with the barbed end broken away, it is so smooth as to be apt to slip up through the cotton and pierce the foramen, and on withdrawing slip away from the cotton, leaving it in the canal. Something between these two extremes is desired. This I obtain by taking a fine steel wire (such as a Donaldson cleanser from which the barbed end is gone) and slightly roughening it near the point by rolling it between two separating files. This slight roughening needs to be repeated occasionally.

To remove Adherent Pieces of Modeling Composition from a Plaster Model.—When the modelling composition of your impression has been a little too much heated in softening it for drawing the model, so that pieces remain adhering to the plaster, do not attempt to scrape them off, but take a small piece of the composition between the thumb and finger, hold the same to an alcohol lamp until the part in the flame is molten, then press this forcibly to the pieces adhering to the plaster, giving it time to cool before withdrawing. The pieces on the model, if dry, will adhere more strongly to the composition than to the plaster, thus coming away.

Obtunding Sensitive Dentin by Pressure Anaesthesia.—Not long ago I was excavating a very sensitive proximal upper incisor cavity. I placed vapocain on cotton in the cavity, and then, instead of attempting, as heretofore, to control the evaporation of the ether by vulcanizable rubber held to place by the thumb and finger, I cut a strip of dam rubber about a half-inch wide and two inches long, and passing it into the proximal space, and then bringing the palatal end up through the adjoining proximal space to the labial region, I drew the ends taut over the cavity and directed the patient to hold them so by digital

pressure. This was merely to confine the ether. But while waiting thus, it occurred to me to attempt to force the drug into the dentinal tubuli by pressure applied through the dam rubber. I therefore took a pellet of vulcanizable rubber and forced it down between the teeth and into the cavity, trusting to its expansion to keep up the pressure. After about eight minutes the cavity was so far anæsthetized that I excavated about, I should say, a fortieth of an inch before striking sensitive dentin. Some later trials were not all so successful. Still, I think there is great promise in this method, and wish others would also experiment on it and report results.

A METHOD OF ADJUSTING DAM CLAMPS ON CON-ICALLY SHAPED TEETH.*

BY C. E. BELLCHAMBER, D.M.D.

The adjusting of the rubber dam on some teeth is a vexatious undertaking, especially on some molar teeth.

The teeth that cause operators most of the trouble are the class styled "conical," with a short crown. The great trouble seems to be to get the dam clamp to remain in its proper position and not work up on the tooth, or possibly slip off altogether. So far there seems to be no clamp made that exactly serves the purpose without giving trouble to the operator.

Some of the clamps now made for such cases grasp the tooth too far root-wise, causing unnecessary pain.

Take a tooth in which the crown is short and the tooth much larger in circumference at the free margin of the gum than at the occlusal surface, the buccal and lingual surfaces inclining sharply towards each other; such a tooth has a tendency to displace any ordinary clamp when placed upon it.

A method found to work nicely in such cases is the following: In order to overcome this difficulty and still use an ordinary clamp, have a mixture of shellac and alcohol. Then place

^{*}From Dental Brief.

either a napkin or some of the absorbent preparations in the mouth and around the tooth, drying it as thoroughly as possible. Then apply some of this shellac solution to both buccal and lingual surfaces of the tooth, allowing it to dry. After this becomes dry, saturate a piece of spunk (about twice the size of a pin-head) in some chloro-percha and place this upon the surface previously shellacked in the desired position. In a few moments the chloroform will evaporate, causing the spunk to adhere sufficiently to maintain its position. After this the clamp and dam can be passed over the tooth and two little spuds to the desired position without being annoyed by the clamp working up on the tooth. It is simple, but a very effectual remedy.

FITTING AND ANCHORING PORCELAIN CROWNS.*

BY A. P. BURKHART, BUFFALO.

I will briefly state my method of fitting and anchoring a porcelain tooth,—a plan I have followed for a number of years with pleasing results to myself and patients. My method is as follows: To be very exact, especially where the teeth interlock closely, I procure an accurate wax bite; after removing it, I carefully trim, and then permit the patient to again bite into the wax, remove it from the mouth carefully, and run a plaster model for future use. Of course a bite is not necessary in all instances; I am governed by the case under consideration. Next I thoroughly clean the tooth or teeth adjoining the root or roots to be crowned, to aid me in procuring the correct shade for the artificial substitute. Having procured the proper tooth as to shade, size, etc., I next adjust the rubber dam, having, of course, previously treated and filled the root-canal. If the root to be crowned is an incisor the rubber dam is adjusted on the six anterior teeth, begin-

^{*}Extract from article in Dental Cosmos.

ning with the canine on either side. The rubber dam must not be too thin,—the medium is best,—and in punching the holes leave a trifle more space between the holes punched than is ordinarily allowed for the filling of cavities.

Before ligating, force the rubber dam well in and around the necks of the teeth, then ligate, carrying the rubber and floss well up and under the gums; and the best results are obtained by beginning with the left canine. By this manner of ligating, the gum surrounding the tooth or root to be crowned is forced back, and higher than can be done if the tooth to be operated on is first ligated.

If the rubber dam has been well secured, next, with carborundum wheels, cut away the undesirable tooth-structure and level the root close up to the floss ligature on the lingual palatal side of the root, and let the final preparation of the face of the root be accomplished with sharp chisels. If reasonable care is taken the rubber dam will not be injured, and the root will be kept perfectly dry. Next drill a hole in the root for the reception of the pin, but the hole should be made only a trifle larger than the pin; enlarge the hole if necessary as the operation progresses. Shape the base of the porcelain tooth, which is to rest on the face of the root; keep fitting and trying until you secure as close a joint as is possible. That reminds me to say, always procure an artificial tooth in which the base is as large or a trifle larger than the face of the root to be crowned. One of the faults of nearly all manufactured crowns is the small-sized base as compared with the width of the tooth at its tip. Having secured a close joint, next shape up by grinding the face, sides, tip, and, if needed, the posterior portion of the tooth; in other words, endeavor as near as possible to imitate its natural mate. I seldom set a crown as I obtain it at the depot. In nearly every instance I remodel by grinding it, and then with sandpaper and cuttlefish disks I thoroughly polish the parts which have been ground. A tooth thus treated when first set may be off color, but this is due to the natural teeth having become dry because of the rubber dam surrounding them. In a few hours, if in the first instance care has been taken in selecting the proper shade, the teeth will all shade up nicely.

Now we come to the final setting. With a wheel bur cut several undercuts in the hole of the root; next fill the undercuts with The S. S. White Dental Mfg. Co.'s premium guttapercha; also place some of the same material in the hole in the root and cover the face of the root, allowing a sufficient amount for a close joint with trifling excess when crown is forced in position. Next place the crown in a crown-setter and warm gradually over a spirit flame (but do not overheat), and then quickly carry the crown to place, forcing and holding it in position with a piece of spunk held between the fingers. It is well in most cases to slightly barb the pin. Having thoroughly cooled the crown and gutta-percha, remove the excess of the latter material by trimming with a hot instrument, or sometimes chloroform is used to good advantage for this purpose. I use gutta-percha because it is durable and holds a crown firmly in place, and should necessity arise for its removal, or should it be fractured, the crown or the remaining pin can, with a pair of forceps properly heated, be removed and no injury be done the root. Gutta-percha will produce a closer and more lasting joint than can be secured with cement, and, all things considered, is preferable in all cases where an all-porcelain crown is used; but cement can be used by those prefering it.

By following in detail the methods I have outlined, a Logan, Bonwill, Davis, or any other make of all-porcelain tooth can be used and pleasing results obtained.

METHOD OF STERILIZATION OF TEETH TO ARREST AND PREVENT THE ACTION OF BACTERIA THAT CAUSE DECAY.*

BY A. C. HART, SAN FRANCISCO, CAL.

The surfaces of the teeth are thoroughly cleansed with pyrozone, then shaped and polished. This gives to the teeth a more beautiful appearance, increases their usefulness, facili-

^{*}Extract from Dental Cosmos.

tates their cleansing by the patient, as well as their sterilization, about to be described. The rubber dam is adjusted over all the teeth, from the second molar on one side to the central incisor of the same side; or more teeth may be under the dam if you choose. Leave abundant space between the holes in the rubber dam, so that there shall be no portion of the mucous surface of the mouth exposed. Doubly ligate the dam to the teeth with waxed silk thread.

The surfaces of the teeth are dried, and then bathed with water of ammonia, medium. This is allowed to act for about three minutes. Little pieces of cotton are packed in between the teeth so as to hold the solution in close proximity. While the surfaces of the teeth are still wet with the ammonia apply three per cent. pyrozone full strength, well soaking the tooth for five or ten minutes. Then dry, using a continuous hot-air blast, so as to dehydrate as rapidly as possible; this is to occupy about ten minutes.

Next there is applied to the teeth a solution containing ten per cent. of formalin (of the forty per cent. aqueous solution) and fifty per cent. of alcohol. This is held in between the teeth with little pieces of cotton as before described, and their surfaces kept continually bathed for thirty minutes. Before removing the rubber dam the surfaces of the teeth are dried, in order that there shall be no action of the formalin upon the mucous surfaces of the mouth, as it is very irritating, and when locally applied in strong solutions sometimes results in a bad slough.

The extraction of the third molars, if the rest of the teeth are in position, is practiced in many cases. Their sterilization is exceedingly difficult; most of my failures have come from attempts to prevent decay in these teeth. The liberal use of a saturated solution of nitrate of silver upon the surface enamel will often penetrate deeply enough to arrest and prevent decay. The soft tissues should be protected, and the tongue and cheeks kept from contact by the use of rolls of non-absorbent cotton.

At the end of three or four months have the patient return for examination and thorough cleansing of the mouth. This time the work will be very much easier. Do not fail, however, to adjust the rubber dam and sterilize in the manner already described. By repetition of this sterilization every three or four months, together with the more careful prophylaxis on the part of the patient, I have been able to arrest and prevent decay in mouths where, previous to my efforts at sterilization, the teeth were rapidly being lost by decay. The time consumed in putting the teeth in a sterile condition is sure to impress the patient with the importance of antiseptic measures.

LOST CANAL CONTINUITY.*

BY OTTO E. INGLIS, D. D. S.

It has fallen to my lot, as perhaps it has to that of others, to be called upon to save, if possible, teeth which are quite badly decayed at the cervical third of the root. In such cases the cavity margin is beneath the gum line, and placement of the rubber dam is impossible. When in addition to this, decay has penetrated the pulp chamber or canal the case may become exceedingly difficult to manage. It may happen that the entrance of the pulp canal by caries will have produced a condition in which it becomes practically impossible to aseptically treat the canal involved either through the cavity of decay or by way of a special entrance upon the occlusal surface. Perhaps the relation of the treatment employed in a special case will more clearly illustrate the idea intended to be conveyed. The case in question was a large, deep cavity upon the distocervical portion of an upper left second molar. The lingual canal was included in the cavity, and when the latter was cleansed the canal was obliterated for a distance of one-quarter of an inch. This, of course, caused a loss of canal continuity, and the oozing from the gum margin would have prevented any comfortable treatment of the canal even had the cavity

^{*}From Stomatologist.

of decay been extended to the occlusal surface, so instead an opening was made upon the occlusal surface, exposing all the root canals as usual. A soft canal probe was now passed through the opening, through the cavity and into the root canal beyond. The cavity was then filled with amalgam which was trimmed up to conform to the contour of the teeth. The canal probe was then carefully withdrawn, thus leaving an artificial canal, formed partly by tooth substance and partly by amalgam. A pellet of cotton saturated with 10 per cent. formaldehyde was sealed in the bulb of the pulp cavity. After twenty-four hours the case was proceeded with as in any case of moist gangrene and with absolutely no difficulty whatever.

The title of this paper permits the writer to include certain features of canal treatment which are more or less annoying. It is not uncommon to enter a canal with a drill or reamer for the purpose of enlarging an opening made with a cleanser, or smooth broach and acid. A slight deviation from the axis of the canal and a cul-de-sac is formed into which the broach passes. The canal is lost and is only recovered by the use of a broach or cleanser, carefully bent so as to engage the root canal and not the *cul-de-sac*. Sometimes this is impossible of accomplishment. If the latter be continued to a perforation practically the same condition exists complicated by hemorrhage. The chips from a drill will occasionally so block a canal as to lead to the suspicion of a curved root even when its length has been predetermined with a small broach. A small portion of temporary stopping or amalgam has occasionally obstructed the lumen of the canal. It is necessary to drill through or scrape out these obstructions. Cotton imparts a peculiar feel to the broach as does a portion of pulp, though this latter more often permits the ready passage and removal of the broach without Broken broaches, drills, and root fillings all give pulp removal. characteristic tactile impressions.

RETAINING APPLIANCE FOR THE LOWER ANTERIOR TEETH.*

BY C. S. BRADLEY, D. D. S., BELOIT, WIS.

It is more difficult to fit a band accurately to the lower incisors because of their constricted body and greater width at the cutting edge. It is therefore necessary to trim away a portion of the enamel on the approximal surface mesially and distally until those walls are perpendicular for a short distance from the cutting edge. This can be easily done with a coarse disk, giving a point of contact to each tooth of about one-eighth of an inch.

Make the appliance in the following manner: For incisor bands, a strip of platinum plate about No. 40, B and S gauge, is cut straight and three-sixteenths of an inch wide. Place it about the tooth to be banded and grasp the ends with a pair or flat-nosed pliers. Burnish the lingual portion to shape and crimp the ends tightly with the pliers over and against the labial portion of the tooth, forming a close joint. For the cuspid teeth, if used for abutments, the bands should be of rolled gold and platinum 36 g., same width as the others but curved to conform to the conical shape of the tooth. The joint should be on the lingual side.

(In case two laterals are to be used for abutments the process would be the same, using the rolled gold and platinum for greater strength and where the band is to show.) Solder all bands with 22 k. solder, taking care to keep it from flowing away from the joint to the under surface of band. After soldering place the bands in position on the teeth, fit them and burnish to place. Trim away with curved scissors the gingival portions of the band mesially and distally, leaving points of contact of about one-tenth of an inch, excepting the abutment bands which may be left wider for greater strength.

The fitting and trimming completed, the bands are placed in perfect position on the teeth and drawn off with plaster impressions. If the teeth are very loose care must be taken not to immerse too deeply in the plaster. Any bands failing to come

^{*}Extract from article in Dental Digest.

away are removed and placed in position in the impression. Paint the inner surface of the bands with a thin solution of plumbago and fill with investement compound. The bands are now in their proper relative position on an investment model. With 18 k. solder catch them together slightly on the lingual surface, enough to prevent any breaking or displacement while fitting the reenforcing plate. The latter is best made of thin clasp metal closely fitted and bent down into all the approximal depressions and extending to joints of the abutment bands. Hold in position with a pair of curved soldering pliers, and fasten it to the bands with 18 k. solder, filling all spaces and drawing the solder well over the joints of the abutment bands. Turn the model over and fill the V-shaped spaces on the labial portion with solder and the appliance is ready for finishing. Boil in dilute sulphuric acid, and polish the lingual side, using carborundum stones and disks in the engine. Polish the solder work only on the labial portion of the bands not used for abutments, and cut away the remaining portion. The completed appliance should be worn for three or four days before cementing permanently in place.

COMBINATIONS OF FILLING MATERIALS TO OVER-COME CERTAIN DIFFICULTIES.*

BY OTTO E. INGLIS, D. D. S.

It has been said that dentistry is two-thirds mechanics and one-third common sense, but it would be more in keeping with the present spirit of the profession to say that it is a mixture of equal parts of mechanics and science, the former directed and controlled by the latter.

It is obvious that any attempt to apply the principles of mechanics must be directed by a knowledge of said principles, or be a failure. Likewise the intelligent utilization of filling materials must be preceded by an appreciation of their physical and therapeutic values.

^{*}From an article in Stomatologist.

It is not intended to weary the reader with a lengthy recital of all the attributes of each filling material, but a brief notice of each is necessary.

Gold, generally acceptable as to color, possesses the physical qualities of perfect and permanent adaptation to all accessible cavities with strong walls. Its resistance to the stress of mastication renders it highly useful for masticating surfaces, the main objection to its use lying in its conductivity and the force necessary for its introduction and polishing.

Amalgam of objectionable color in anterior teeth is not so contra-indicated in posterior teeth and is of less conductivity than gold, is readily adapted to even frail cavity walls, and easily trimmed to shape or formed with a matrix. If of a formula providing a material which practically neither shrinks nor expands, and which resists the stress of mastication, it will do good service in properly prepared cavities.

Zinc phosphate, if of the adhesive variety, may be depended upon for practically perfect cavity occupancy, and its non-conductivity renders its use advantageous in deep cavities. Its action upon the dentinal fibrillæ and the pulp is as yet undetermined, many claiming it to cause pulp-death, others denying such action. In such case it is better to protect the pulp by means of an intermediate varnish, any of these accomplishing the purpose. As a lining it prevents discoloration of dentinal walls by amalgam and acts as a support for frail walls, the retention of which may be desired. As a filling material per se the "Harvard" seems to be most adhesive and at the same time least soluble in the fluids of the mouth if allowed to harden before access of saliva is permitted. It loses bulk from attrition and by solution in lactic acid.

Gutta-percha is less affected by the fluids of the mouth than by zinc phosphate, and does not permit decay of the dentinal walls of cavities if properly adapted. It is worn out or beaten down by the force of mastication if subjected to it.

In the mouth it may either be cupped out, usually when containing high percentages of zinc oxid, or appears to decay upon its surface much after the manner in which dentin is decayed. In shallow cavities the inorganic matter may have disappeared and the cavity be occupied by a yellowish or greenish black mass rep-

resenting the gutta-percha proper of the original filling undergoing dissolution by bacteria. Comparison of such fillings composed of about one part gutta-percha and five parts inorganics (zinc oxids, etc.), with those composed of high percentages of inorganics seems to indicate that the happiest proportions will probably be found to lie in the neighborhood of six to six and one-half parts of zinc oxid to one of gutta-percha. The non-conductivity of gutta-percha is a valuable property.

Oxychlorid of zinc is antiseptic, for a time at least, and has its greatest value as a lining for cavities in which it is necessary to leave *decalcified* dentin and as a coagulant in bleached teeth or root canals.

With these five materials and a good varnish, such as "cavitine" or dammar in chloroform, any combination may be effected which will overcome any condition which may present.

Let us suppose a superior central incisor with a large compound approximal cavity involving the lingual surface, the labial and incisal-wall enamel only. The pulp protected with varnish, if not exposed, or capped or canal treated. A gold preparation involves removal of weak walls. Instead, if gold in view be objected to, line with a mix of Harvard zinc phosphate which will be adhesive and set in a reasonable time, place in the cavity and introduce a plastic gold ("moss fibre" will do) in such manner as not to permit the upper surface of the gold to be covered with cement; wait until the cement sets, cleanse the cavity margins, condense the gold, and proceed to complete the filling with small pieces of moss-fibre gold in a thoroughly cohesive condition. The combination may be confined to the incisal portion or cervical portion of the cavity as desired.

This principle is applicable to all deep occlusal cavities in molars or bicuspids when indicated by frailness of walls, depth, inconvenience of undercuts, etc. Amalgam already mixed may be introduced upon moderately soft zinc phosphate to obtain the adhesion of the cement to both the wall and the amalgam.

This may be utilized not only for support of cavity walls, but to insure better exclusion of bacteria and acid infiltrations from the cavity floor and walls, thereby insuring an undisturbed cavity therapeusis. Failures of such fillings are usually attributable to non-removal of zinc phosphate from cavity margins.

The zinc phosphate may be introduced stiffly mixed and pushed to place with a burnisher and the cavity shaped to ideal lines, for gold or amalgam. The method is almost universally applicable where walls are excessively concaved by the depredations of caries. As a typical example may be cited a case of a disto-occlusal cavity in a molar, the buccal and the lingual walls thinned by caries, even beneath the cusps, and the pulpal wall requiring a non-conducting and supporting intermediate. In such cases anchorage is obtained mainly upon the occlusal surface. Another method consists of mixing equal portions of zinc phosphate and amalgam, lining the cavity with the mixture, freeing the margin and completing with amalgam.

Amalgam may be placed by either of the methods given above and allowed to harden, when gold may be built into slight undercuts made in the amalgam or in the tooth. Very pleasing results may thus be obtained. Let us suppose, for example, that an upper or lower molar is decayed mesially in such manner as to approach the pulp and also go beneath the gum or to it. Pulp protection involves the use of zinc phosphate, which, being soluble in lactic acid, must be protected at the gum line, so zinc phosphate is covered with amalgam by any indicated method (the amount of undercut governing), and the contour is restored. When the amalgam is set a hoe excavator or narrow chisel is used to cut a square groove along the mesio-buccal margin between the amalgam and the margin. This should be of width sufficient to remove amalgam from view. The occlusal third of the amalgam is trimmed away to the shape of an ordinary cervical margin and slight buccal and lingual dips made to prevent the pulling out of the gold. The additional necessary anchorage is obtained by extension into the occlusal surface. Gold is placed at a subsequent sitting.

Another and quicker method is useful in certain cases, where pressure is not detrimental or where the pulp has been protected against prssure. A matrix is adapted and firmly secured to restore the fourth wall of an approximal cavity. Amalgam is solidly packed into the cavity and brought to as hard a condition as possible. The occlusal half or third is cut away with a small chisel. A plastic gold is packed by hand pressure into union with

the amalgam. The mercury is taken up by the first pieces, but soon ceases to be absorbed. Any gold may be used to complete the operation. The occlusal surface may be dressed down at once, but it is better that the approximal surface be left to another sitting. Any surplus of amalgam should be removed with a cuttle-fish strip.

Again, suppose a failure at linguo-cervical margin of a large gold filling otherwise good. There is no objection ordinarily to the introduction of amalgam as a repair at this point.

It is to be recalled that amalgam in union with gold discolors upon its surface very promptly, hence it should be kept from view. Gold upon amalgam seems to protect the amalgam from stress, and change of shape is less noticeable. This may be in part due to the condensation of the amalgam by the force of packing the gold, with the absorption of excess mercury by the crystal gold.

Gutta-percha should not be relied upon as a substratum for metal fillings, except where a sufficient seating of the filling upon solid tooth structure is obtained. The same is true when it is covered by zinc phosphate, which, however, having a tendency to dissolve at cervical margin is to be protected in certain cases approaching the gum margin with a guard lining of gutta-percha. Gutta-percha is useful as a non-conductor in deep cavities, subject to the above restriction.

It is not to be presumed that the suggestions here made are rules for general practice. Special conditions must be met by special methods, and these herein set forth are such as have been successfully used by many practitioners in the combat with dental caries. There is no desire upon the part of the writer to claim originality for any method mentioned, nor to detract from credit due the originators by lack of specific mention.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.

PAINLESS CAUSTIC.

Cocaine mixed with fuming nitric acid makes a painless caustic, and it is possible that when cocaine is mixed with zinc chloride, it may be painless. It is well worth trying, anyhow.—

Alk. Clinic.

PARAFORM CEMENT.

A. A. FOWLER.

The addition of a small proportion of paraform to cement, in addition to its germicidal qualities, gives added strength, as it is comparatively insoluble in water; it also makes it more sticky.—Dental Gazette.

IMPRESSION PLASTER.

DR. BASGARD.

Where there are heavy undercuts, or teeth standing alone, mix with plaster of Paris one-third its bulk of finely powdered pumice. It breaks readily, while giving as clear an impression as plaster alone.—British Journal.

TO OBTAIN IMPRESSION FOR LOWER DENTURE.

DR. FOUNT.

Before pressing the tray down on the lower alveolar ridge, direct the patient to raise the tip of the tongue to the roof of the mouth. This will draw the lingual muscles from under the tray, while the other muscles will be in normal position. This is particularly desirable in flat mouths.—Dental Record.

ETCHING OF PORCELAIN INLAYS.

It has been suggested that inlays might be made rougher inside the cavity, so that the cement could get a better hold, by the use of hydrofluoric acid. Unfortunately, the acid etches a perfectly smooth surface. When a rough etching of any kind is desirable a little barium sulphate is usually mixed with the acid to form a very thin paste.—Stomatologist.

IMMEDIATE SEPARATION WITHOUT PAIN.

S. M'L. MILNE.

The gum is first bathed with cocaine, a 1½ per cent. solution, then the hypodermic is used, having a fine sharp needle, and the cocaine is slowly and carefully forced in. Any ordinary separator is first used to obtain space, then an appliance, consisting of a threaded wire with a tapering head on one end and a tapering nut on the other, is applied. This takes up very little space, is out of the way for operating, and keeps back the dam and tissues.—Dominion Journal.

GOLD AND PLATINUM FOR CROWN-WORK.

W. TRUEMAN.

I prefer in crown work an alloy of gold and platinum—twenty-two parts of pure gold and two parts of platinum. It is quite pliable, quite as much so as pure gold or pure platinum. It is a strong metal and does not show so much in the mouth; it has a peculiar gray color and can be soldered with pure gold with safety; it is dense and takes a good polish. I find it satisfactory for making seamless crowns and for making caps in the porcelain-faced crowns.—*International*.

ALUMINUM PLATE NOT COMPATIBLE WITH GOLD FILLING.

J. G. HARPER.

The patient had lost all of the teeth in the upper jaw except the central incisors; one of these contained a large gold filling. She had been wearing a partial rubber plate, and the mucous membrane under the plate was in a highly inflamed condition. An aluminum plate was put in the mouth. The patient complained of a salty taste and a profuse flow of saliva, which made it impossible to wear the plate, a gold plate was beyond her means, so she had to be content with a rubber plate.—Dental Review.

SOAPSTONE.

J. G. HARPER.

Pulverized soap-stone has several uses in the dental office. Have a quantity of the powder in a wide-mouthed bottle on the operating case, a little rubbed on the dam where the holes are punched will make the application easy. The powder applied to the surface of cement fillings prevents its sticking to the instruments. In the laboratory a pepper box of the powder from which to sprinkle onto plaster of paris, after the plaster in the lower part of the flask has hardened sufficiently to handle, makes a good separating medium.—Dental Review.

A NEW ANTIDOTE FOR CARBOLIC ACID POISONING.

W. C. KERNS.

Pure cider vinegar, if taken at once, internally, after a case of accidental or intentional dose of carbolic acid, will neutralize the acid and thus save a life. Occasionally, while treating a tooth, we accidentally get some of the acid on the lip; if you rub the lip at once with vinegar, you will have no scar left as a reminder of your carelessness. If you doubt the truthfulness of this assertion, just pour a little pure carbolic acid on your hand and leave it there until it begins to burn, then pour on pure cider vinegar and rub it well, and you will be convinced.

HOW TO HANDLE INLAYS.

C. F. ALLEN.

One difficulty in making inlays is the cutting of little notches. The smaller inlays are very difficult to handle with the fingers, and with the extremest care the operator is in constant danger of losing them. If one will, however, keep in his cabinet half a dozen or so orange-wood sticks tipped with shellac, all he has to do is to hold the point of one of them over his Bunsen burner and it is but a matter of a few seconds when he has his inlay held in a practical way that admits of no losing and makes easy this otherwise troublesome detail.—International Journal.

BLEACHING.

I find that the easiest way to use peroxide of sodium in bleaching is as follows: After the cavity is cleaned and dried, wet it carefully with distilled, boiled water and then with a white pine stick whittled to a long, slender point, flat sided, carry the dry powder into the cavity slowly and watch the result. Keep on feeding the cavity until the interior begins to be frothy. Keep this up until the tooth is bleached. (This will take about thirty minutes.) Fill the cavity, after washing carefully with carbonate of soda water 1 to 100, and then pack it with precipitated calcium phosphate (Bulkely) until the whole interior is well lined with it, using distilled water to make a paste. Afterward fill with any kind of cement two or three shades whiter than the tooth and cover the filling with gold.—Dental Review.

GOLD SOLDER.

For repairing broken metal, fine instruments, etc., when heat would be injurious:

Flux.—Metallic	sodium I	part.
Mercury		parts.
(Keep in glass-st	oppered bottle.)	
Solder.—Silver		parts.
Tin		parts.
Bismuth	1 I	part.
Platinu	n 1	part.

Melt together and cast an ingot; rasp to filings. Mix filings 3 parts and flux 1 part to a smooth paste when about to use. Smooth and plastic as potter's clay; makes joints that are aimost inseparable. Omitting the bismuth gives a granular mass suitable for filling crevices. Omitting the platinum reduces the strength and requires an hour to harden.—Stomatologist.

SOLDERLESS ATTACHMENT OF FACINGS IN CROWN AND BRIDGE WORK

C. S. TALBERT.

The facing is prepared by beveling the four sides after having ground to proper shape and size. A lug or supplementary backing is made, corresponding in shape and size with the facing

and of such thickness as may be necessary to make the desired crown or dummy. This lug is made of any suitable metal, preferably gold, or may be made of a silver alloy and covered with gold solder. Pin holes are drilled in the lug to receive the facing pins. A piece of 36 gold plate is then soldered on the lug and pin holes punched through into the holes in the lug. The facing is then placed in position and the gold plate is burnished to same, forming a box. Suitable cusps are then struck up and soldered on. The facings are cemented in after the piece has been finished, so have not been subjected to heat.—

Dental Review.

SUPRARENAL CAPSULES IN HEMORRHAGE.

E. H. RAYMOND.

The suprarenal comes in the form of a tablet, powder, and aqueous extract. I have not found any agent that can compare with them for arresting hemorrhage, nor have I yet had a case where it has failed. While working in cavities between the teeth or around the cervical margins where the gums interiore by bleeding—in fact, wherever we wish to arrest hemorrhage to enable us to continue our operations and not defer them to some future time—this valuable preparation seems to meet all the requirements. A great advantage it has over the mineral styptics is that, being of an organic nature, there is no soreness nor sloughing of the parts after its use. Another advantage is that it possesses no disagreeable odor. I think the powder preferable to the aqueous extract, as the latter loses its potency in a few days. It is prepared from the suprarenal glands of healthy sheep. It does not seem to possess antiseptic or anæsthetic properties.—International.

AN EXCELLENT INVESTMENT MATERIAL.

A. P. FELLOWS.

I wish to make mention of a mode of investment which I find very convenient, rapid, and in many respects better than that to which we have been accustomed to use. I make use of it in backing teeth. I usually finish my backing before a piece is

completed. I back my tooth with pure gold 34 gauge, cut off the tooth pins to within a short distance of the backing, with a sharp instrument nick the edges of the pins, and then with a piece of hard or soft rubber swage the backing against the tooth. This will make it conform to the facing, no matter how irregular it may be, and without buckling. The investment is made by soaking a piece of asbestos paper and dipping it in water until it becomes a pulpy mass. The porcelain facing is pressed into the asbestos, and its edges are brought a trifle above the porcelain. I can immediately apply the blow-pipe without waiting for it to dry, and in a few minutes have a backing that is hard to excel for closeness. Having flowed upon this pure gold—a 22-carat gold—the entire back of the crown is of the same metal that the balance of the crown is made of.—International.

BELL-SHAPED CROWN, TO BE APPLIED WITHOUT TRIMMING THE TOOTH.

A. J. M'DONAGH.

Following is a concise description of this original and clever device of Dr. McDonagh's. In the molar to be crowned measure the distance from the highest cusp to the largest part of the swell of the crown, then from the point to the neck, then the circumference at the largest part of the swell. Prepare a crown, having the lower section of pure gold fitting only at the swell, the upper section of 22-k kold accurately adapted to the tooth. Place in position on the tooth. On the lingual side pinch the gold, making it fit accurately at the neck, which is comparatively simple on account of this part being of pure gold. With curved shears cut away the part pinched up. Remove the crown. Unite the crack made by cutting off pinched part by placing over it and soldering to it a fairly wide and thick strip of platinum—two pieces of square post-metal soldered together will answer the purpose. File this to a dovetail. Make a female part of the dovetail with overlapping flanges of pure gold tightly adapted to the lingual surface of the crown. Saw a slit up the platinum dovetail, and the crown is ready for insertion.—Dominion Journal.

EDITORIAL.

THE NATIONAL MEETINGS.

Much of importance took place at the recent meetings in Milwaukee. The National Association of Dental Faculties increased the length of the college course from three years to four years of seven months each to begin with the session of 1903-4. The minimum tuition fee for all colleges will be \$100 beginning with the session of 1902-3, and all colleges are to begin teaching in the morning and continue through the day, and not begin in the afternoon and continue into the night as some colleges have done heretofore. Each college of the Association contributed \$50 toward fighting the fraudulent diploma mills in this country, and in this way about \$3,000 was contributed by this body alone. Two new colleges were elected to membership, the Keokuk Dental College and the New Orleans College of Dentistry.

The committee appointed last year to investigate the Dental Department National University made its report and the college was to be tried for infraction of the rules of the Association, but before a decision was reached the Washington School secured an injunction restraining the Faculties Association from expelling or suspending the National University School, so proceedings were stopped. Before an injunction could be served on the National Association of Dental Examiners, however, they voted to drop this school from their list of recognized colleges, and also passed a resolution to not recognize any college not a member in good standing in the National Association of Dental Faculties, which was even worse for the National University School than being expelled from the N. A. D. F.

The two bodies, Faculties and Examiners, are now working harmoniously together and will in this way accomplish much more good for the profession and dentistry.

The United States consul at Munich, Germany, Hon. J. H. Worman, was in attendance at the meetings and gave each association information regarding the lamentable state of dental affairs in Germany. The German government is on the verge of shutting out American dentists and threatens to expel those already practicing there. This has been brought about by diploma granting by diploma mills in the United States, particularly in Illinois.

It is a shame that this diploma traffic should be allowed to go on, to the detriment of the first-class colleges and of the profession, and that any State, and even the State Dental Board should uphold these questionable institutions. It is time that the members of the dental profession arise and vigorously protest against this disgraceful sort of thing, particularly in the section where it now prevails.

The Foreign Relations Committee has done and is doing a grand work, as has Consul Worman also, but they need the assistance of every true professional dentist to help stamp out these bogus institutions and put a stop to the traffic in dental diplomas.

Regarding this same matter the special committee on the President's address, offered the following preamble and resolutions, which were adopted by the National Association of Dental Examiners:

Whereas, It has been brought to the attention of this association through the August number of *Items and Interest* and the report on President's address and the evidences presented by Dr. J. H. Worman, the American consul at Munich, Germany, and also through a communication from the National Association of Dental Faculties, with evidence attested by the names of the foreign relations committee of such association, that certain colleges in the State of Illinois have been issuing illegal diplomas and circulating by means of circulars and other methods information which is misleading, and in the essential untrue, and

Whereas, The American State Boards of Examination have thus been brought into disrepute in foreign countries, especially in Germany, and such actions have there led to the publication of a government decree depriving those holding American degrees from practicing in that country except upon conditions scarcely obtainable, therefore, be it

Resolved, That the National Association of Dental Examiners, in session at Milwaukee, does hereby place itself on record as denouncing and condemning in the most emphatic language this deplorable state of affairs,

and piaces itself on record as opposed to such impeachment and unworthy official acts, and also pledges itself to use every honorable means to aid in bringing to strict accountability such college or examining boards; and be it further

Kesolved. That, inasmuch as the evidence now in the possession of the United States government at Washington, D. C., and of the United States consul at Munich, a copy of which evidence was duly transmitted to the Governor of the State of Illinois, goes to show that a former Secretary of the Board of Dental Examiners of the State of Illinois, together with other officials of that body, has issued certifications and given licenses unwarranted by law, among others a certification as to the reputability of a certain institution, which, according to the minutes of the State Board of Dental Examiners, have never been accorded to that institution, we respectfully request investigation not only of the acts of the former secretary of the said board, but also as to the acts of this institution in issuing diploma. And be it further

Kesolved, That this Association hereby earnestly calls upon the dental profession of the State of Illmois to take such action as may result in the

correction of these abuses

CHAS. A. MEEKER, W. H. CARSON, J. ALLEN OSMUN, MELVILLE A. MASON,

Committee.

A similar resolution was adopted by the Faculties Association.

At the meeting of the National Dental Association there were over four hundred dentists in attendance. In his address President G. V. Black offered many good suggestions as to the future management of the society, and by vote his formulated plan is to be printed, sent to each member of the association for criticism and taken up for action at the next meeting of the society. Dr. J. S. Marshall read a report of the progress of the Army Examining Board, setting forth some interesting statistics on the subject which will be presented to our readers in a subsequent issue.

The papers presented were of a high order and the meeting declared one of the most successful ever held. A digest of papers and discussions will be given in future numbers of the Ohio Dental Journal.

Members of the local committee deserve great credit for the admirable way in which visiting dentists were treated throughout the convention week, as the tally-ho ride, steamboat excursions, receptions, concerts, trolley rides, etc., were greatly enjoyed and appreciated by everyone. We will come again, Friend B. V. I. Brown, we like the way you treat us.

SOCIETY.

NATIONAL DENTAL ASSOCIATION.

At the recent meeting of the National Dental Association, held at Milwukee, August 6-9, 1901, the following officers were elected for the ensuing year: President, J. A. Libbey, Pittsburg; vice-president, from East, S. H. Guliford, Philadelphia; vice-president, from South, L. G. Noel, Nashville; vice-president, from West, W. P. Dickinson, Minneapolis; recording secretary, A. H. Peck, Chicago; corresponding secretary, Josephine D. Pfeifer, Chicago; treasurer, H. W. Morgan, Nashville; executive council, H. J. Burkhart, Batavia, N. Y.; B. Holly Smith, Baltimore; J. Y. Crawford, Nashville; C. C. Chittenden, Madison, Wis.; M. F. Finley, Washington. Executive Committee, J. D. Patterson, Kansas City; C. S. Butler, Buffalo; C. N. Johnson, Chicago; H. A. Smith, Cincinnati; V. H. Jackson, New York; T. P. Hinman, Atlanta; T. S. Waters, Baltimore; W. N. Cogan, Washington; G. V. I. Brown, Milwaukee. The next meeting will be held at Niagara Falls in August, 1902.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

At the recent meeting held in Milwaukee, the following officers were elected for the ensuing year:

President—J. F. Dowsley, Boston, Mass. First Vice-President—C. A. Meeker, Newark, N. J. Second Vice-President—J. A. Hall, Collinsville, Ala. Third Vice-President—B. L. Thorpe, St. Louis, Mo. Secretary—J. A. Osmun, Newark, N. J.

NATONAL ASSOCIATION OF DENTAL FACULTIES.

The following are the new officers elected at the recent annual meeting:

President-Dr. Wilbur F. Litch, Philadelphia, Pa.

Vice-President-Dr. G. V. I. Brown, Milwaukee, Wis.

Secretary—Dr. J. H. Kennerly, St. Louis, Mo.

Treasurer-Dr. H. W. Morgan, Nashville, Tenn.

Executive Committee—Dr. S. W. Foster, Atlanta, Ga.; Dr. D. J. McMillen, Kansas City, Mo.; Dr. J. B. Wilmot, Toronto, Canada.

Ad Interim Committee—Dr. J. P. Gray, Nashville, Tenn.; Dr. W. T. McLean, Cincinnati, O.; A. H. Peck, Chicago, Ill.

Committee on Laws—Dr. H. W. Morgan, Nashville, Tenn.; Dr. W. M. Montell, Baltimore, Md.; Dr. F. D. Weisse, New York.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

RUBBER DAM.—To ABATE ITS ODOR.—Wash with a damp sponge; dry, and dust with slightly scented borated talcum powder.—Stomatologist.

TOOTH BLEACHING.—The pinkish, or brown dentinal discoloration caused by the disintegration of and diffusion of hæmoglobin through the action of arsenic may be treated by strong pyrozone supplemented by strong oxalic acids.—Stomatologist.

Medical Art in Thibet.—Dr. Susie Carson Rijnhart, in her book, "With the Thibetans in Tent and Temple," says that there is no medical art worthy to be called such in Thibet. She writes: "For headache, large sticking plasters are applied to the patient's head and forehead; for rheumatism, often a needle is buried in the arm or shoulder; a tooth is extracted by tying a rope to it and jerking it out, sometimes bringing out a part of the jaw at the same time; a sufferer with stomach-ache may be subjected to a good pounding, or to the application of a piece of wick soaked in burning butter grease, or, if medicine is to be taken internally, it will consist probably of a piece of paper on which a prayer is written, rolled up in the form of a pellet, and, if this fails to produce the desired effect, another pellet is administered composed of the bones of some pious priest."

SACRED TEETH.—Teeth have been worshipped, and, in fact, are still venerated as relics in some religious shrines. Buddha's tooth is preserved in a temple in India; the Cingalese worshipped the tooth of a monkey; while an elephant's tooth and a shark's tooth served a similar purpose among the peoples of the Malabar and Tonga Islands respectively. Teeth have often been and still are worn as amulets. Sharks' teeth are valued in this way in Samoa.

ENAMINING BOARD FOR DENTAL SURGEONS STATIONED.—The three members of the Army Examining Board for Dental Surgeons have received their commissions and will be stationed as follows: Dr. J. S. Marshall goes to San Francisco, and aside from his regular army service will occupy the chair of oral surgery in the Dental Department of the University of California; Dr. R. T. Oliver will be stationed at Manila and have charge of the work in the Philippines; Dr. Morgan goes to Cuba.

GOLD BLINDNESS.—According to the Medical Press, "Hypermetropic members of the dental profession who are also astigmatic are in some cases liable to lose the power of distinguishing gold-filling from the tooth on which they are working. This form of retinal asthenopia appears to be due to abnormally rapid exhaustion of the visual power, and the trouble is noticed to occur when the eyes have been kept fixed upon a small gold stopping for a length of time, the warm yellow color of the metal tending to exaggerate the pre-existing defect. In addition to inability to distinguish the filling from the tooth, dentists who present this defect cannot recognize clearly the contour of the hole they are stopping. In the Canadian Practitioner for June, it is pointed out that age does not predispose to this affection nor does youth exclude it. The primary cause of this particular form of blindness, indeed, is probably the excess of yellow rays from the gold metal. After a few days' rest, the sufferer is enabled to resume work as before, but recurrence frequently takes place, and the intervals during which work can be carried on become shorter and shorter. The treatment suggested by Mr. L. Webster Fox is, first to correct any error of refraction, to examine carefully into the general health of the patient, and to advise that nothing tight be worn round the neck. The last direction is necessary in consequence of so much dental work having to be done with the head bent. The intense white light which accompanies the fusing of gold plates contains an excess of yellow rays, and it is suggested that this constitutes the causative factor in the disorder."

WHAT IS THE INTERNATIONAL DENTAL FEDERATION?—The Federation Dentaire Internationale is a union of all the national committees which were constituted for the International Dental Congress of 1900 and has for its object:

The arrangement of international meetings and dental congresses.

The preservation and the promotion of the bonds which attach the different national committees and societies together.

The organization of such international committees as it thinks it wise to appoint.

In a general way the organization of all that can attribute to the advancement of dental science throughout the world.

The F. D. I. is represented by an Executive Council which was elected by the votes of the general meeting of the Congress of the 14th August, 1900, after free discussion. This Executive Council, with its appointed officers and committee, has the following duties:

To carry into execution the laws of the Federation.

To fix the place and date of International meetings.

To call together the different International committees.

To carry out the realization of all resolutions passed by the F. D. I.

To examine propositions or resolutions submitted by the national committees, federations, or societies.

Just as the Congress decided, at its meeting on the 15th of August, 1900, to appoint an Executive Council representing the F. D. I., it also resolved at the same general meeting that the Council should appoint an International Committee on Education, charged to draw up a schedule of the theoretical and practical knowledge which the dentist should possess.

The members of this Committee have accordingly been appointed by the Executive Council and will meet for the first time in London, at the same time as the Council. This committee will appoint its own officers, will examine the conditions of dental studies, from an international point of view, as well as the proposal for the International Federation of Dental Schools.

Drs. Brophy, Harlan and Kirk represented America at the meeting in August.

CHANGES IN THE DENTAL DEPARTMENT OHIO MEDICAL UNIVERSITY,— At a recent meeting of the University Trustees the following changes were made in the Dental Faculty: Dr. L. P. Bethel, Kent, O., was chosen Dean of the Dental Department and elected Professor of the Principles and Practice of Operative Dentistry; Prof. Hawley was assigned the chair of Clinical Dentistry and Instructor in Crown and Bridge Work; Prof. Semans, in connection with Dental Anatomy, will teach Operative Technics; Dr. Casto will serve as assistant in Clinical Dentistry, and Instructor in Orthodontia; Prof. Beauman, in connection with Continuous Gum Work, will give the students a thorough course in the Compounding of Porcelain Gum-enamels, and Porcelain Inlay Work. The other professors will teach the same branches as formerly. A new Colt Stereoptican, a Bausch & Lomb Projection Microscope, an Electric Furnace, Electric Lathe and other modern apparatuses have just been added to facilitate the teaching in the college. These additions, together with other contemplated changes, will make this college second to none in this country.

THE

OHIO DENTAL JOURNAL.

Vol. XXI.

OCTOBER, 1901.

No. 10.

CONTRIBUTIONS.

PATHOLOGY IN DENTAL PRACTICE.*

BY GEO. W. COOK, D. D. S., CHICAGO, ILL.

We have a number of ill-defined symptoms supposed to arise from the non-elimination of cellular excretory product or the non-oxidation of certain nitrogenous matter. This is called autointoxication. Primarily, this conception was based upon the fact that all living plant and animal life excretes certain substances which are poisonous to the cell from which they came. The question naturally arises, where does this animal excretion originate; it is not taken in with food or drink; for if one took nothing but pure food, pure water, and breathed only pure air, the exertions of the organs are not found in the normal tissues of the body. We know that in the presence of warmth and moisture, proteid matter is broken up by the agency of bacteria into its ultimate simple molecule, nitrates, nitrites, animonia (NH-4), CO-2 water, and the various inorganic elements, viz., S. Fe., Na. K. Mg. Ca., etc.

It is also a well established fact that during this process of

^{*}Abstract of paper read before the National Dental Association, Milwaukee, August 6-9, 1901.

splitting up the protein molecule by bacteria, there are a number of intermediate products formed which are basic nitrogenous crystalline substances, and are intensely poisonous. These are called ptomains, the formation of which always points to action of bacteria on proteid substance.

In the chemical process of splitting up the proteid molecule of the cell, there is formed a comparatively simple molecule constituent, known as urea. The proteid molecule, when split up in this way, necessarily gives rise to the formation of a number of intermediate products which are looked upon as steps in the oxidation process; they are antecedents of the nitrogenous end product urea. Among these might be mentioned certain of the amid compounds: Adenin; hypoxanthin; xanthin; guanin; uric acid, etc. These compounds which were supposed to originate in the tissues either along with or a precursor of urea and uric acid, are termed leucomains.

As for their being poisonous to the body, we can no more admit than that the caffeine is poisonous to the coffee tree, or that nicotine is poisonous to the tobacco plant, for in both cases these alkaloids exist, not as pure xanthin or caffeine, but in the proteid compound which renders them non-toxic to the plant or the individual in which they are found. But the idea is still prevalent that during the process of oxidation—by this term we mean the transformation of the complex proteid molecule as it exists in the living cell or the dead food material, to a more simple compound eventually ending in urea water and excreted from the body as such—certain of the supposed intermediate products are no further oxidized and remain in the tissue and are capable of producing toxic symptoms. That protein matter is excreted from the animal body in the form of urea is true, but we have little or no evidence that certain basic substances in dead proteid matter are intermediate oxidation products. It is well known that if urea be retained in the body, toxic symptoms will be produced (uremia), in such a case, the term autointoxication might be implied.

Under normal conditions the animal body as a whole is able to dispose of its own excretion through the bowels, kidneys, and

skin, likewise every cell is able to contribute its normal quota of excretory matter to general avenues of excretion, viz., kidneys, bowels, etc., cease to do their work and toxic symptoms will soon develop. Going still further back the individual cells may cease to excrete their dead matter and also cause retention followed by toxic symptoms. But the primary cause which so changes the chemical contstituent of the individual cells so that they no longer carry on their work in a normal way, or so change the kidneys that they no longer excrete the normal amount of area from the body, or produce poisonous decomposition products in the bowels, must necessarily come from without; some agency acting as a disease stimulus. This view must then necessarily do away with the term autointoxication, or the autogenous disease as a primary pathological entity and reduce such conditions to the plane of mere secondary conditions following the external disease stimulus.

We have many reasons for believing that many of the socalled autointoxications or autogenous diseases are due to a chemical change in the proteid molecule of the cell which is caused by a chemical change in the cell environment.

This change must necessarily bring about a change in metabolism, thus liberating the poisonous products of the cell. But where must we look for the primary cause? In nature all organic matter is reduced to its primary elements by the agency of bacteria; this is the enzymotic or fermentative action of bacteria. Also on living organic bodies certain bacteria find a food media and act in an enzymotic or fermentative way, giving rise to certain chemical changes in the cell.

So far as we know, we can trace all the so-called autointoxication to a primary subinfection from the bowel or respiratory tract. Bacteria may act any place along the elementary tract from the mouth to the lower bowel. If the condition of the mouth is not hygienic or the food is not of the proper kind, the stomach and bowels cannot dispose of it at the right time, thus giving lodgment to various fermentative bacteria; they or their product are readily absorbed into the system, either of which may give rise to poisonous symptoms or may so

change the chemistry of the blood lymph of the cells themselves, and also change non-pathogenic to a pathogenic bacteria, which are generally looking for an entrance into the body either through the respiratory or gastrointestinal epithelium, there finding a favorable media in which to grow and carry out their further changes which are incompatible with the life of the host. This second condition is really a subinfection and really explains the ways in which all infectious disease may originate, whether of a local or general character.

When we consider that a disease process is the result of a series of factors, which are of unequal value, we are then forced to say that the essence of the disease is not in the cell (Virchow), neither can we say it is time or place (Pettinkofer) or a bacterium is the true and sufficient cause of disease (Koch). But all of these are factors of unequal value. With these facts before us, we can no longer say pyorrhoea alveolaristic constitutional any more than an alveolar abscess is constitutional, both of which are to be dealt with as local microbiological affections, the same as rheumatism, catarrh, influenza, pneumonia and diphtheria. The cure of this disease, as of all other infectious diseases, must be to remove the predisposition of the individual under which come the phenomena of inherited and acquired immunity and predisposition to this disease.

The pathogenic properties of micro- organisms in the saliva depend upon the nutritive value; therefore, it is purely the chemical properties of saliva that manifest themselves in the changed condition of micro-organisms, both morphlogically and pathologically. In this connection I will relate some personal tabulated observations in persons whose gastrointestinal disturbance was the predisposing cause of local infection.

Vincent described what he called the bacillus fusiformis (which is quite common in the human mouth), and called attention to certain pathological processes on the oral mucous membrane. I have had an opportunity of studying the vital phenomena of this micro-organism. It seems to live in the oral cavity as a saprophyte until intestinal disarrangement appears, then, if this trouble is but slight, this bacillus will set up only

a passive inflammatory process. Should the intestinal trouble increase, the local ulceration also increases. It is only with a bacteriological examination that it can be determined from some of the syphilitic lesions in the mouth. I am not prepared to say, as yet, whether or not this germ is always present in the oral cavity; but if it is, there are times when there are but few.

The point I wish to bring out is that this germ may be considered as one of the oral cavity, for the reason as soon as any gastrointestinal trouble is set up mucous patches may appear on the oral mucous membrane or tonsil, possibly both, in which it is the exciting cause. I believe as Lesner does that in mercurial stomatitis it becomes a factor of considerable importance; by local treatment the local affections disappear, but in a few days it will return unless the predisposing cause has been removed. How true is this in pyorrhea alveolaris? There are at least six other affections of the oral mucous membrane, which are caused by the action of micro-organisms, but only when there is a predisposing cause in the body fluids. Marmorek, Kolle, Widal, Bezancon, all have observed the difference between streptococcus grown in the mouth of healthy persons and those grown under other circumstances. Those grown in the mouth are short changes and will not set up a disease process as those grown in bouillon.

In six cases of rheumatic persons I studied bacteria of the tonsils and found that three of them had a diplococcus described by F. Meyer. All of these cases have pyorrhea alveolaris, and showed the characteristic bacteriological finding. This diplococcus found in the tonsil in some cases could be called a streptococcus. The length of the chains seems to depend upon the conditions of the gastointestinal tract. When the bowels become constipated, it manifests itself in the length of the chains taken on a streptococcus form. When salian cathartics are given internally, or if the individual puts on sodium salicylate, the diplococcus forms again appear, and finally disappear from the tonsillar mucus. Clinicians have observed such conditions in cases of the injection of antitoxin.

In conclusion I wish to emphasize the point that there is a marked line between a predisposing and an exciting cause of disease.

DISCUSSION.

Dr. W. H. Whitslar, of Cleveland: Were it not for the statement of the essavist that poisons within the body are not due to external stimuli, I should feel that the request of a few minutes ago, that I open the discussion of this paper, had produced within me autointoxication. Physiological knowledge is necessary to determine where health leaves off and disease begins. There is a natural resilience of the normal functions, but an excessive deviation due to one or more of the many causes will produce continued functional aberration, or disease. The essayist well says that disease is not dependent on disturbed cell function alone, but cell tissue and organic function may all be influenced by the excessive energy of the activity of various micro-organisms. The chemico-physiological functions are peculiarly susceptible to the influence of micro-organic intoxication. The saliva may be secreted under such influences as will give it a healthy or unhealthy function. It may assist or retard digestion. It may render the mouth sterile or the reverse; and in exactly the same way the liver, kidneys and other organs may singly or in combination assist to disarrange the physiological functions, producing what the essayist has termed subinfection. The nervous system, which controls all the vital organs, is the vital point of attack. By irritation of the nerve function in a single organ the entire nervous system may be greatly influenced, and when there is a combined attack from many different, or contiguous organs, the nerve disease becomes more serious, and if the primary stimulation be not sufficient to throw off the disease, general prostration ensues. From this it will readily be seen that this is a most important subject for even the specialist who only treats a limited area of the whole body, and yet that portion may be influential in producing great systemic consequences.

A COMPARATIVE STUDY OF BLEACHING AGENTS.

BY N. S. HOFF, D. D. S., ANN ARBOR, MICH.

That a comparative study of the bleaching powers of various well-known bleaching agents on organic stains might be made, a number of old extracted teeth were selected and cleansed of all carious substances, the apical ends cut off and the pulp tissue thoroughly removed. They were then thoroughly cleansed mechanically and chemically by chlorinated soda. After washing and drying they were soaked for three days in the following solution to stain: Eucalyptol full strength solution; old and dark oil of cloves; old oil of cassia; Black's 1, 2, 3 mixture and aristol; iodized phenol; 95 per cent. solution of carbolic acid; old creosote; solution of iodoform in ether; alcoholic solution of beta naphthol; a glycerine solution of tannic acid.

They were then removed from the solutions and slowly dried until entirely free from excess of moisture. The result showed staining varying from old gold to almost a purple.

One tooth of each stain was then cut across the root into thin sections, leaving the crowns almost intact. A complete set of the sections was retained as a proof set, or sample of each stain, and the remainder were subjected to the staining powers of the following bleaching agents: Twenty-five per cent peroxid of hydrogen; three per cent peroxid of hydrogen; saturated solution of sodium dioxide; saturated solution of benzozone; aluminum chloride; chlorinated lime; Kirk's sulphurous acid method. These re-agents and the methods of using them are well known except benzozone, which is a new organic peroxide, and is used as a disinfectant, being considered of higher value than mercuric chloride.

The bleaching agents used were divided into two classes—oxidizers and reducers—because of their chemical reactions. The oxidizers include all the peroxides and the reducers the chemical re-agents.

^{*}Abstract of paper read at Tri-State Dental Meeting, Indianapolis.

The bleaching of the ten stains by the seven bleaching agents was done under as nearly similar conditions as could be made. Each set of sections was treated to the respective reagents for twenty-four hours at room temperature about 60° F., and then the temperature was raised to 150° and kept there for one hour. The sections were then removed from the bleaching solutions and washed thoroughly in several changes of distilled water. They were then dried in the sunshine for several days and tabulated in proper order on a card for study.

It was found that the twenty-five per cent peroxide of hydrogen was most effective in the majority of stains, bleaching all except the iodized phenol and the creosote. The sodium dioxide produced almost as profound bleaching as the peroxide, the iodized phenol stain yielding to this bleacher. None of the sections were as clear as those bleached by the peroxide of hydrogen. Benzozone stood third in effectiveness. This agent is not readily soluble in water and does not act promptly, but is more continuous as a supersaturated solution was used. This agent has much of promise, due to the fact that it is made of organic acids which will not disintegrate the hard tooth tissues, and plenty of time may safely be given for it to act.

The three per cent peroxide did not decolor the stains sufficiently to make it of any special value. The aluminum chloride was only slightly better than the three per cent peroxide of hydrogen. It seems to have acted very favorably on the iodoform and the tannic acid stains.

The chlorinated lime had about the same value as the aluminum chloride. It seemed slightly more effective in bleaching the eucalyptol and iodoform stains.

Kirk's sodium sulphite and boric acid mixture was the least effective. It had no effect upon the oils, creosote or naphtha stains.

This study seems to indicate that the bleaching of organic stains cannot be as effectively done by chemical re-agents on the substitution theory as by the directly oxidizing agents. Whether this is due to nascent oxygen set free or to oxygen in a molecular form, it is difficult to determine.

Practically, these conclusions would seem to indicate that effective bleaching of organic stains from medicines at least can best be done by those agents which will liberate most freely free oxygen.

There is much to learn as to the best methods of utilizing these stain reducers in the most effective and conservative way.

MODERN METHODS IN CROWN AND BRIDGE WORK.

BY DR. J. L. YOUNG, DETROIT, MICH.

The following is a brief outline: The basis of all crown work, especially such as is intended to support bridge work, is the collar or band around the tooth or the stump of the root. As a rule all bands should pass beneath the gum at least one thirty-second part of an inch, whether for porcelam or gold crowns, and should not project above the gum enough to show an excessive amount of the metal used, especially where used on the anterior teeth.

The upper cuspid teeth are often employed for the attachment of one or more missing adjacent teeth, and as these teeth are often free from caries, conscientious operators hesitate to cut off the crowns of these teeth to make bridge attachments and hence resort to what is known as the open-face collar. Because of the peculiar shape of the cuspid teeth, being either short and thick, or long with nearly equilateral proximal surfaces, or very much constricted necks, it is not always possible to adopt an open-faced crown to these teeth so that it will not loosen and permit recurrence of caries under the bands. It is also impracticable to preserve the inter-proximal spaces if the bands are made sufficiently heavy to withstand the strain of more than a one-tooth bridge. Cement used in the attachment of such bands is exposed to

^{*}Abstract of paper read before the Tri-State Meeting, Indianapolis, Ind., June 4-6, 1901.

the dissolving influences of the saliva to such an extent as to very materially shorten the life of the bridge.

It is preferable generally to sacrifice the pulps of good teeth so that a firm and permanent anchorage may be secured for the attachment of bridges. It is the author's conviction that a more useful structure will result and the life of all teeth or roots involved will be prolonged.

The author's method of removing crowns and pulps, when necessary, is to incise such crowns as can be so treated and inject the pulp with sterile cocain solution while still paralyzed from the shock of incision. Then remove the anesthetized pulp and fill root at once, using every precaution to prevent infection. For teeth that can not be so treated, the occlusal surfaces are ground down with corborundum stones until sensitive and then anesthetized by cataphoresis and the pulp removed as before.

The shaping of molar stumps for cap crowns is done after removal of the pulp by grinding the proximal and lingual and buccal surfaces to the desired extent with corborundum disks and stones and then rounding the corners with diamond disks which have been swaged saucer shape. The shaping of the stump should be of such extent as to permit desirable contouring to preserve interproximal spaces.

As additional support the essayist advocated using saddles where long spaces were to be bridged; that is, a narrow plate swaged to fit the gum and upon which the bridge is to be constructed. These are particularly desirable in porcelain bridge work, as the bridges need not be made so bulky to get desired strength.

The essayist described his method of constructing a porcelain bridge from the upper cuspid to first molar on the same side; also, one in which the Mason facings were employed.

The essayist maintained that the essential features of good bridge work were first, good and secure anchorage; and secondly, strong and substantial construction, using metal of such thickness that it will not change shape under the strain of mastication; thirdly, solder of high grade should always be

used and limited in quantity to an amount which will equalize the construction in every part. Solders of low caret and used in excessive quantities contract unduly and distort the several elements in cooling so that easy setting of the bridge is not possible.

DISCUSSION.

Dr. J. F. Stephan, of Cleveland, Ohio: Every one has his pet methods. I shall not intrude mine at this time. I cannot agree with the essayist in condemning all open-faced bands, because I don't care to mutilate well-formed, sound teeth when they can be used without mutilation, and safely, too. Neither do I agree with him in using seamless crowns as bridge attachments. It is not essential that a band pass beneath the gum in every case, but if it does not pass beneath it should not closely approach it; there must be a self-cleansing space, or one that can be readily cleansed by the patient.

In making open-faced collars I sometimes dress the proximal surface considerably to allow of ready insertion of the bridge without distorting it, but in every case the ground surface must be covered by the metal of the collar and the cement used to set the collar. I am also very particular to bevel and finish nicely the edges of metal in the interproximal space and where it laps over onto the tooth, just the same as though it were a filling. This renders cleansing easy and does not invite accumulations of putrefactive substances.

I don't like the heroic method of incising teeth and extirpating pulps; I prefer cataphoresis or the cocain pressure method.

I prefer to make bridges strong enough so that they need not rest on the gums at all. I find that saddle bridges are difficult to keep clean, and in time produce a diseased condition of the soft membranes on which they rest.

My method of making bicuspid dummies is to grind facing to position and then grind the occlusal end to a forty-five degree miter, and adapt to its flat surface a platinum backing by swaging it between two pieces of semi-hard rubber. To the mitred occlusal end is then fitted the swaged cusps and waxed to place. The porcelain face is then removed and solder flowed into the metal back and cusps uniting them and contouring and finishing to some extent. The pin holes in the backing are then drilled out and the porcelain facing returned to its place and the dummy assembled with the other parts of the bridge and invested for soldering, which is done with a solder fusing at a lower temperature than that used to make the bulk of the dummy.

Dr. N. S. Hoff, of Ann Arbor, Mich.: The essayist condemns all use of the open-faced crown, and it seems to me, without sufficient reason. These crowns, when imperfectly fitted or unsubstantially made, are unquestionably to be condemned. They should not either be placed in the mouth of a patient who will not take care of his teeth in a reasonable manner. There may be some cuspid teeth to which it is impossible to fit an open-face crown, but there are few which may not, by slight changes which will not mutilate the tooth, be made more serviceable by this method than by the entire removal of the crown and its substitution with an artificial one. No artificial crown can be made as artistic, and the chances are that it will not be as durable.

Dr. C. V. Vignes, of New Orleans, La.: I have abandoned all open-faced crowns, because they do not stand more than two or three years. The cement washes out and the bridge loosens, or they furnish spaces for the accumulation of putrefactive material which causes destruction of the entire tooth by a gradual solution of its hard tissues.

In making soldered dummies I do not leave the lingual surfaces uncontoured. My method is to grind porcelain facing to place and back with gold and platinum plate, then form the cusps and attach to backing and facing with adhesive wax, built out to full contour of the tooth to be represented. Then on the proximal sides apply No. 60 gold and platinum foil, leaving the lingual face with only the wax showing. Then invest and boil out the wax, leaving a metallic box or matrix

into which flow solder until full. This will produce a solid contoured crown or dummy which may be assembled and soldered into the bridge. Its advantages are that it is easily and quickly made and is at the same time artistic.

Dr. W. A. Price, of Cleveland, O.: We should not condemn the pulps in teeth where they can be saved, not even to secure foundations for bridge work. I say this because I think it is impracticable to properly remove the pulp from one-half the canals and to securely fill them so that detrimental results may not sooner or later take place. I don't like to replace the natural crowns with porcelain crowns, especially in early life, as the teeth naturally change color as the patient gets older, and a porcelain crown that is eight or ten years old will not be in harmony with its neighbors, necessitating the removal of the bridge and a change.

PRESIDENT'S ADDRESS.*

BY G. V. BLACK, D. D. S., M. D., CHICAGO.

The address briefly reviewed the work of the National Societies from the organization of the first one in 1860 up to the present time. It called attention to the wonderful progress made by the profession since its beginning, and the influence association work had exerted on it. The national, local and state organizations have been the important, if not the real factors in all this progress.

The membership in the early National organizations was a delegate one largely, and it was the purpose to make the National meeting a representative convention more than an individual membership body. All this had so changed that in 1889 the National Dental Association had a permanent membership of 369, and was represented by delegates from only twenty organizations of every kind. The address deplored this fact, as it indicated that the Association was drifting rap-

^{*}Synopsis of address read at the annual meeting of the National Dental Association, Milwaukee, August, 1901.

idly away from the local organizations which it should by all means represent. It is important that a representative should be accredited at each meeting from at least every State organization and as many district and local organizations as was practicable. In order that this might be corrected it the future, he advised that the constitution be amended so that in case any State should fail of representation for two consecutive years, all membership in any such State should lapse. It was also suggested that it would increase the circulation of the proceedings of the Association if some plan could be devised whereby each member of all State societies should have a copy of the transactions of this body.

The address also called attention to the fact that the papers read before this Association were too often of the class which might very appropriately be styled as "literature of the day." Such papers are often interesting and valuable to a degree, but they add little to the general knowledge of the profession. In fact, the best scientific papers of the day are either read before other societies or published in the journals instead of before this, which should above all others be the proper place for them. The reason for this is found to be that adequate consideration is not given to such papers here and the papers are not given as wide a hearing as they will have if printed in some of the better journals.

Another difficulty which has embarrassed the management of this Association not a little in the past, has been the fact that too large a number of papers have been offered for adequate presentation, and no adequate plan of censorship seems possible without incurring the displeasure of contributors. To or come this difficulty, the section plan, as operated by the American Medical Association, was advocated. By dividing the Association work into three sections, which should hold meetings simultaneously, three times as much work could be done, and general meetings could be held each day for such time as mught be necessary for the transaction of any executive business of a general character.

A general revision of the constitution was advocated, so

that much of the executive business might be transacted by the officers in executive sessions, and also that the duties of the officers might be more clearly defined, especially in the matter of formulating the program.

The season of the year when the meetings are held was also a subject of criticism. It was a period of recreation to many, and not the best time to secure good work. The address advocated changing the date to either the middle of September or the last of February.

The address also expressed the wish that all National organizations might become affiliated and hold their meetings at the same time. This would be a more economical arrangement than the present method, and the influence of each upon the other would be salutary and of great benefit.

REPORT ON ETIOLOGY, PHYSIOLOGY, PROPHY-LAXIS, HYGIENE, AND ELECTRICITY.*

BY J. D. PATTERSON, D.D.S., KANSAS CITY, MO.

Dr. Patterson's report was a resume of the year's progress in Etiology, Physiology, Prophylaxis, Hygiene, and Electricity.

Regarding the subject of dental caries he cited the discovery of "gelatinous plaques" by Black and Williams and recently promulgated knowledge about caries brought forward at the recent International Congress at Paris. He spoke of Dr. Michael's report on the saliva, who claimed that, "The saliva, like all recrementitious secretions, is liable to physiological oscillation in constant relation to the humors of the body." Connecting this study with caries of the teeth these conclusions with others are laid:

- 1. "The saliva contains definite chemical principles which arrest or retard the progress of dental caries (sulfocyanid of ammonia)."
- 2. "The alkaline sulfocyanids arrest the formation of putrefactive fermentation."

- 3. "Chemically, dental caries is a disease of demineralization, due to the presence of an excess of acid principles in the saliva having a greater chemical affinity for the constituents of the tooth."
- 4. "The chemical affinity of potassium and sodium is greater than that of the earthy alkaline bases in combination with acid salts."
- 5. "Lactic acid possesses a greater affinity for calcium than does carbonic acid."
- 6. Active dental caries characterizes the hyperacid diathesis."
- 7. "Diathetic dental caries (gout and diabetes) results from lactic acid fermentations."

Regarding hygiene, Dr. J. D. Logan, of Edinburgh, says:

"Having discussed the matter of caries in relation to health and the condition of the oral cavity generally in relation to the dental organs, we may ask wherein lies the cause of this appalling destruction of teeth. Verily the answer is not difficult to find; it must be entirely one of hygiene.

As a prophylactic mouth-wash, Dr. G. V. I. Brown has advocated peroxid of hydrogen as superior to solutions of carbolic acid and bichlorid of mercury, which, when held in the mouth, destroy the superficial germs, but not those deeper located, while peroxid of hydrogen oxidizes the organic deposits about the teeth, loosens up the secretions about the gums, and sets free germs that were at first inaccessible to the action of carbolic acid or bichlorid of mercury. If after the germs have thus set free any of the above solutions will bring about the most desirable state of asepsis.

The essayist spoke about the inspection of the teeth of school children in Europe and advocated such a movement in America.

Regarding the etiology of sensitive dentine, Dr. Gysi, of Zurich, holds the following theory: "Substances rich in water are incompressible. The dentine is traversed by a great num-

ber of canaliculi which are filled with a substance very rich in water (about 80%), and which, like water, is incompressible. When pressure is exercised in a carious cavity with an instrument, the pressure is directly transmitted through the semiliquid contents to the odontoblasts, which are the center of the true sensitiveness of the dentine."

The subject of pyorrhea was discussed, and the various theories, already familiarly known, were reiterated.

DISCUSSION.

DR. C. N. PEIRCE, of Philadelphia: I am not entirely sure that micro-organisms are entirely responsible for dental caries. Defective enamel frequently has much to do with it, and the general systemic conditions which modify the character of the buccal secretions should be taken seriously into account. Dental caries is most active during the period of youth or from say seven to twenty years. At this time the alkaline constituents of the blood are being rapidly built into the hard tissues of the body, leaving the normal fluids of the body inclined to be acid in character. Such a condition would favor acid buccal secretions and tend to produce erosion of the teeth.

Would classify suppuration of the gums into *true* and *false* pyorrhoea. True pyorrhoea is attended with systemic as well as local complications, due to a condition of perverted nutrition. It may and usually does have a local manifestation, induced by some mechanical injury, such as tartar, scaling, injury to the gums by toothpick, etc. False pyorrhoea is local in character entirely and without systemic complication. It is amenable to local treatment.

Dr. W. C. Barrett, of Buffalo, N. Y.: The report is suggestive but not altogether accurate. Miller has conclusively shown that some micro-organisms that do not usually produce acid are capable of producing dental caries under artificial conditions. The environment of the teeth has everything to do with the character and encroachment of this disease.

In regard to pyorrhoea alveolaris, it is a reproach to our scientific attainments that we cannot know the etiology of this

disease. Some one will solve this problem for us and immortalize himself in doing so. About all that we now know for certain is that it is periosteal disease.

Dr. E. S. Talbot, of Chicago: Expressed surprise that in such an assembly the term "pyorrhoea alveolaris" should be used, because this disease very often exists without pus. There is always an inflammation, either superficial or deep, involving the interstitial structures. Interstitial gingivitis is a much more fitting name. The soft structures are always involved and the hard ones are very likely to be also. There can be no such differentiation as "true and false." Dogs experimentally treated with mercury will show indications of periosteal inflammation in the various stages. Impaired eliminating function will produce localized pericementitis. The hot weather in the Philippines has shown its influence in producing interstitial gingivitis. In the high and cold mountains, the people suffer from interstitial gingivitis, because the function of the skin becomes impaired, consequently toxic influences accumulate in the body and produce the so-called autointoxication. We see the same results from asthmatic diseases. The condition of the gums afford one of the best means for diagnosing diseased conditions of the liver or kidneys. A low form of gum inflammation may exist for years without taking on a suppurative condition. Deposits on the teeth are not usually causative, but incidental to this disease.

DENTAL MEDICINE.

BY M. E. LE GALLEY, D. D. S., NORWALK, O.

I am well aware of the fact that in whatever line of work a practitioner finds his talents most directed he is apt to think that particular branch the most important. Most of us are not apt to be specialists in the line of dental medicine, yet to a limited extent all of us call into daily use various drugs and medicines, or dispense in limited quantities to our patients

remedies known to relieve the toothache, allay inflammations, or counteract diseases of the teeth and gums.

I do not consider this branch of medicine the most important one in dentistry, but I do consider it of more importance than it is often apt to be considered.

The classes of remedies used by the dental practitioner most largely are, first, antiseptics; second, hemostatics; third, anesthetics, and fourth, escharotics.

Of the first class of remedies mentioned, namely, antiseptics, I will speak first, as it is by far of the greater practical use to the dentist, thus of most importance to him.

The ideal antiseptic solution should answer the following requisites for dental use: First, it should possess high antiseptic properties to antagonize germs of the mouth. Second, it should be non-poisonous, that it may be used freely in mouth washes. Third, it should be odorless or tasteless, or at least of a not disagreeable odor or taste, and fourth, it should not stain. There are numbers of antiseptic solutions on the market, many of them patent remedies, consequently more expensive than they should be to use freely. It has been recently discovered that acetanilid possesses high antiseptic properties, and it has been used with excellent results in powder form, as a substitute for iodoform, in dressing surgical ber of cases of severe poisoning are quite numerous. The wounds, ulcers, etc. A solution of the strength one and onehalf drachms acetanilid to the ounce of alcohol, made agreeable as well as increasing its antiseptic properties by the addition of one or more of the essential oils, makes a mouth wash that gives very satisfactory results. The best agent for sterilizing instruments is ordinary sal soda, or washing soda, technically soda carbonas. Boiling the instruments in a weak solution of the salt will overcome inclination to rust and keep your instruments bright and clean.

The essential oils are known to every dentist as among the best antiseptics as well as germicides to use in root canals, except in cases where discoloration of the tooth must be guarded against.

Iodoform is one of the best known antiseptics, used in

dressing wounds and in root canals, but is rejected by many practitioners because of its offensive odor.

Pyrozone, or Hydrogen Per Oxide, is a valuable antiseptic used in cases of chronic inflammation or whenever there is suppuration and pus is found. An excellent wash for Pyorrhea Alveolaris. A three per cent. solution makes a good mouth wash.

These mentioned and many others I will not speak of comprise the long list we all have to choose from, and each practitioner must use the one he finds most successful in his hands, or the one that in his judgment best suits the case treated.

Dentistry to-day reaches so far into surgery that we should pay the same antiseptic heed as the general surgeon.

What surgeon would perform even the most minor operation without having instruments, towels, and all equipments in thorough antiseptic condition? How often do we as dentists do more than to wipe off forceps, excavators or other instruments, proceeding at once with the next patient? Is it just to our patients, knowing as we do the great danger of inoculating our best patrons, not only with loathsome diseases which can and have been contracted from unclean instruments, but spreading such diseases of the oral cavity as pyorrhea and others?

The first principle of antisepsis is perfect cleanliness and following perfectly clean instruments, perfectly clean hands and personal attirement. The dentist who appears before his patient ready for operating without to his knowledge first cleansing the hands loses at once not only his confidence but often his future patronage.

Our work should not stop with the repair of decay, we should lend ourselves to the prevention of it and instruct our patrons how best to cleanse their teeth, recommend some antiseptic wash that will keep their mouths in good condition, restrict matters as to their diet during pregnancy, and what will be best for the children while their teeth are calcifying.

There is opportunity for study and investigation in the study of Hemostatics. We know the many objections to iron salts or solutions, they always discolor the teeth and often

,

produce sloughing of the tissues, and do not always arrest the hemorrhage. In ordinary surgical work styptics and hemostatics are very little used in the present day, but often after extractions the practitioner is annoyed by persistent hemorrhages. Of the many available remedies used in these cases I will give only a few prescriptions.

A mixture of antipyrine and tannin will stop hemorrhage. Apply on a sponge. Use alcoholic solution of tannin.

A stypic of great value is prepared as follows:

Tr. Benzoin I ounce
Alum 2 ounces
Aqua 20 ounces

Mix and boil six hours in a glazed earthen vessel, adding hot water to compensate for evaporation. Filter and keep in well stoppered bottles. A drop of this fluid poured in a glass containing human blood produces instant coagulation.

ANAESTHETICS.

1. Dental surgeons are proud of the fact that the scientific world owes to the dental profession the honor of the discovery of anesthesia.

On the 10th of December, 1844, a gentleman by the name of Colton was giving exhibitions of the effect of what he called laughing gas in Hartford, Conn. Among those present was Dr. Horace Wells, a dentist, of Hartford. A young man while under the influence of the gas unconsciously hurt himself and was unaware of the fact until informed by Dr. Wells. This convinced the doctor it was an anesthetic, and the following day he had a tooth extracted by Dr. Riggs, using the gas. This was December 11th, 1844. This was the first surgical operation performed where an anæsthetic was used.

Dr. Wells was ridiculed and sneered at by the physicians of Boston when he tried to make his discovery known to them. Before a class in Cambridge College he administered gas and extracted a tooth, and because the patient cried out, yet

experienced no pain, the anæsthetic was pronounced a failure. After this he went to Europe for his health and upon returning was astonished to learn his former partner, Dr. Morton, claimed the discovery. Dr. Morton set up the claim that nitrous oxide was not an anæsthetic. This claim has clung to this gas to the present day, but is given mostly by those ignorant of its use. Dr. Wells later committed suicide.

For producing general anæsthesia in dental practice, gas still hold the supremacy. Experience has taught the necessity of care with all cases when used and wise discrimination in special cases, such as when the patient is an epileptic, where there are weakened and fatty heart walls, engorged and degenerate blood vessels and imperfectly aerated blood; under such conditions nitrous oxide should be combined with oxygen.

The safety of this anæsthetic as a general anæsthetic has made it deservedly the most popular for all brief operations, especially in dental practice. The principal objections offered is its tendency to produce symptoms similar to asphyxia.

Nitrous oxide should be administered as other anæsthetics, with care and judgment. You must have the entire confidence of your patient and convince him thoroughly of the harmlessness and perfect safety in taking it. There should be perfect quiet while administering and no conversations in the operating room. Insist on full inhalations until the patient is entirely under the influence. Silence and absence of contact with the patient are essential to quiet and successful results without excitement. Dr. Colton has administered gas 168,000 times without a fatal case.

Many cases of death attributed to gas are no doubt due to other causes. No doubt injury can be done by it, but caution, judgment and discretion makes it one of the best and safest anæsthetics in all cases for dental use.

Chloroform and ether as anæsthetics in dental use I will speak of but briefly. They should only be administered by a physician and in cases or operations too lengthy for the administrations of gas; while the dentist should not be ignorant of the effects and administration of these anæsthetics, his respon-

sibility is relieved by the patient's family physician having the case in hand, while as a susual thing he is better prepared to have charge of such an operation, and the dentist then has nothing else to engage his attention than the extraction of the teeth.

Of the various local anæsthetics in use by the dentist the greater number of them no doubt contain cocaine in some form, of greater or less strength. The number of fatal cases from the use of this drug so far reported is small, but the numpoisonous properties of cocaine seem to be especially pronounced where used in the mouth, nose or urethra; it is less so when used upon operations of the trunk and extremities. Solutions of too great strength are too often employed, some of them being made hastily by simply adding a few grains of the drug to an unknown quantity of water. When used at all it should be used in solutions of known strength, prepared in the most careful manner and in fresh solutions. It needs to be prepared fresh when used, as it decomposes after standing and will not give as good results. Dr. Costa has found that the local anæsthetic effect is more rapid, more intense and more lasting if the solution is warmed. Patients bear the administration much better early in the day and after a hearty meal than at other times.

Never more than a 4 per cent. solution should be used and a 2½ per cent., or even I per cent. solution if properly applied will give more satisfactory results. By injecting in the gum tissues its action is more rapid and marked, there is first a blanching and sense of numbness, after this effect there is an increased redness.

Acute poisoning by cocaine usually has the following symptoms: A tingling and numbing of the extremities, and excitation of the nervous system, a flushing of the face, followed by pallor, dilation of the pupils, profuse perspiration, nausea and vomiting. Grave cases are followed by convulsions and increased respiration. The patient dies of asphyxia due to paralysis of the respiratory center.

Cocaine in the hands of a careful operator and administered properly is without doubt a good and useful remedy for

any dentist's cabinet and saves much of the sharp pain of extracting when a general anæsthetic cannot be used, but its many idiosyncrasies make its use unsatisfactory except in the hands of the most careful and painstaking practitioner.

A test for pure cocaine, heat with H2 S O4, and a clear liquid is left.

Antidotes for cocaine poisoning are: Aromatic spirits ammonia; inhale chloroform; injections of ether and caffeine. If possible, lay the patient on his back.

Of the many new drug preparations I can say nothing from experience, but only what is claimed for them.

For about a year Orthoform has been used successfully in cases of violent pains coming from an inflamed pulp, the effect being instantaneous, the pain is at once relieved. It takes the place of carbolic acid as an antiseptic; it is without smell or taste, and no precautions need be taken in application, as it is harmless to mucous membranes. After extractions of teeth and roots a dressing in the socket relieves all pain and is non-poisonous. In these cases a 25 per cent. lanolin unguent gives the best results; it is a good dressing for all wounds, sores, ulcers, fissures of the lips, etc., a substitute for iodoform for filling root canals, etc.; on account of its double nature as an anæsthetic and antiseptic it no doubt will soon replace the less desirable drugs used for this purpose in dentistry.

A soluble solution of Orthoform is called Nirvanin, and fills all the requirements of a local anæsthetic. It has the same anæsthetic effect as cocaine and is applied entirely like the latter. It possesses great advantages over the latter in that it is absolutely harmless, causes no resipratory or heart complications. A 5 per cent. solution seems to give the best results. Out of 164 extractions recorded in which Nirvanin has been used, 155 were painless.

A 5 per cent solution can be kept without decomposing, as the Nirvanin itself has a germicidal effect, but weaker solutions may be sterilized by heating. Authors from whom I have quoted claim the anæsthesia produced by the injections of this drug are deep seated and of long duration, that extractions are with but few exceptions painless and no edema or sloughing follows.

Its advantages, therefore, are, the pulse and respiration remain unchanged, its non-toxicity, the length of duration of effect, its anti-bacterial action and profound anæsthesia produced. With all of these good qualities in its favor, it must be placed in the front rank as a local anæsthetic for dental use.

In the use of all drugs carefulness and discretion with a thorough knowledge of the effect and results of the drug used is the duty of every practitioner. No one remedy is infallible in all cases, but the application of such remedies as are known to give usually good results is better than the use of many remedies indiscriminately. That practitioner who uses with intelligence one remedy known to be good will more likely obtain results desired than he who has numberless remedies at his command but knows little of the chemistry or action of any of them.

CLINICS AT TRI-STATE DENTAL MEETING.

NEW METAL FOR CAST PLATES.

DR. R. C. BROPHY, CHICAGO, ILL.

This was a method of casting a lower denture using a new alloy of Dr. Brophy's own devising, also a new investment composition. The claim was that the metal had a bright white color which it retained, and that it was more dense than other cast metals. The metal cast well, but the investment used made a rough surface which required considerable work to polish. The inventor claims for the investment that it does not change form under the heat used in casting, therefore the plates fit better. The heat for casting was generated by a gasoline furnace of Dr. Brophy's invention, which was neat in appearance and a very effective method of securing heat for such purposes.

CARMICHAEL SYSTEM FOR CROWN AND BRIDGE-WORK.

DR. J. P. CARMICHAEL, MILWAUKEE, WIS.

A number of prepared specimens of the application of this system for attaching bridges and restoring contours were shown. He also demonstrated the attachment of a bridge which he had in process of construction, showing the preparation of the teeth and method of constructing the retainers. Essentially the system is to cut a groove axially on the mesial and distal surfaces which extends across the occlusal surfaces, making a continuous groove from the gum on the mesial to the gum on the distal over the occlusal. A plate of metal is then fitted to the lingual or palatal surface and into this groove. When properly done this makes a secure and firm anchorage for a bridge and the tooth has not been irreparably mutilated, and the labial face is free from the unsightly appearance of metal.

For porcelain bridge work the method is applicable as for gold work. It is the greatest value in building out and restoring the contour of the incisors when badly decayed on the mesial and distal surfaces and when broken through to the occlusal edge. Such cases as usually demand cutting off the crown entirely or fitting with a box crown. By this process a much more aesthetic result may be secured and with probably greater safety to the tooth. There are also many other valuable uses to which the system may be applied, such as inlays, protecting caps for abraded teeth, etc.

The advantages claimed are, adaptation to any tooth, strength, no mutilation of the teeth, conserves the pulp, hygienic, and avoids an undue display of metal in the mouth.

CONTOURING PLIERS.

DR. D. MILLER, CHICAGO.

These contouring pliers were unique. The points of a pair of round-nosed pliers are fitted with matched die and coun-

ter in the form of rolls, which revolve on the points of the pliers and against each other, thus creasing or contouring the band as the case may need, and dependent on what form of roll is used. The rolls are readily interchangeable and a considerable variety can in this way be obtained. For some purposes it is without doubt a valuable appliance, but the crowns which we saw contoured with it, were not properly done. The lateral contracts were at considerable distance from the occlusal surfaces, which would leave wedge-shape spaces or grooves into which food particles would lodge and force their way into the interdental spaces.

ADAPTING A PAD OF GOLD TO THE CERVICAL BORDER WITH A MATRIX.

DR. F. W. STEPHAN, CHICAGO, ILL.

The Doctor demonstrated his method of securing the adaptation of foil to the cervical border of mesial and distal cavities. He folds the foil upon itself several times until he secures a mat of any desirable thickness, which he cuts to such size as will pass between the proximating teeth and cover the outlines of the cavity. The matrix is then slipped down beside it and wedged until it forces the foil tight against the tooth. With a sharp instrument the mat of foil is then cut and folded into the cavity. This insures an adaptation to the margin over which it is folded and protects it from plugger contact. The gold filling is then built in as usual. The mat holds the matrix away from the margins, so that there are no close angles to fill. A very helpful suggestion.

REMOVABLE BEAKS FOR EXTRACTING FORCEPS.

DR. C. V. VIGNES, NEW ORLEANS, LA.

The Doctor exhibited a pair of forcep handles to which might be added the beaks of any forcep desired. The instrument was ingeniously constructed, but we doubt its practicability. There is more danger, we imagine, of breaking the beaks or having them loosen than in an ordinary forcep, and it would not facilitate extraction to have to stop and change beaks in the midst of an operation which it is better should be done as expeditiously as possible.

The Doctor also demonstrated his method of constructing dummies and gold crowns for bridge work, which was described in the discussion of Dr. Young's paper.

PARKER SHOT SWEDGING MACHINE.

DR. B. H. LEE, GRAND RAPIDS, MICH.

The value of the Parker swedging apparatus in crown work, as well as for plate work, is well known. Casts with deep undercuts are easily used by this method. Aluminum and thin metal may be swedged on plaster molds.

SANDVIG'S SWEDGING APPARATUS.

DR. I. OTTESEN, CHICAGO, ILL.

Dr. Sandvig claims that by this method all kinds of metal plates can be swedged in one-tenths the time consumed by any other method.

The die is made direct from the plaster impression, without even waiting for it to dry, and it can be used any number of times without danger of its changing form. The metal baseplate is swedged direct upon this die, using sand as a counter die.

The metal used is very low fusing and free from zinc, thereby removing the objectionable feature of the old methods of swedging, whereby the aluminum is contaminated with the zinc.

Dr. Sandvig has been using aluminum plates swedged in this manner for the past six years, and has had the greatest success. He claims that aluminum should be used more as a base-plate in the future, and that a metal plate can be made almost as quickly as it can be done in rubber.

FILLING ROOT CANALS WITH GOLD FOIL.

DR. I. DOUGLAS, ROMEO, MICH.

The Doctor demonstrated his method of filling root canals with gold foil. The work was successfully done, but we can see no advantage it can have over gutta-percha or other materials more readily and just as effectively manipulated. The Doctor also showed some tin fillings, which were remarkable for restoration of contour and close adaptation.

A NEW MAT GOLD.

DR. J. B. VERNON, MEMPHIS, TENN.

Dr. Vernon exhibited and demonstrated the method of using a new preparation of gold for filling teeth. It resembles the various crystal golds on the market. It is of a more even texture than de Trey's and not so shredded as White's Moss Fibre. It is claimed for it that it can be thoroughly condensed by hand pressure, and does not ball or pull away from the cavity walls or margins, and is about as easy to manipulate as an alloy. Special oval-faced pluggers are advocated for using it, so that it may be spread laterally against the walls. The claim is also made that it can be thus condensed until it is practically as solid as melted gold and with just as good edge strength. It is probably another variety of crystal gold precipitated by electrolysis, and we have no doubt it will find many uses, but will not take the place of foil where hard wear is required.

FLOSS SILK TOOTHPICK.

DR. J. W. COWAN, GENESEO, N. Y.

The floss silk holder is designed to expedite the use of floss silk in cleansing the interdental spaces. It consists of a metallic

handle, resembling a medium-sized pen-knife in size and shape, which contains a bobbin on which the floss is wound, and a wire frame which can be extended as much as a knife blade is from a pocket-knife, and to which the floss can be secured in such a way as to make it easy to pass the floss between the upper and lower posterior teeth. After using, the floss can be readily cut off and removed and the appliance folded up for conveniently carrying in the vest pocket.

CARIOUS TOOTH IN A DERMOID CYST.

DR. J. R. CALLAHAN, CINCINNATI.

This was a large dermoid cyst, which contained several teeth, one of which showed unmistakable evidence of dental caries. In the crown of a molar a cavity involving perhaps one-third of the substance of the tooth, was a brown soft substance resembling exactly the brown leathery decay often seen in molar teeth. The other teeth were unaffected.

METALLIC GUARD FOR ENGINE DISKS AND WHEELS.

DR. F. F. HOYER, OWOSSO, MICH.

This automatic metal disk guard for protecting the buccal membranes and tongue from contact with engine disks and wheels, when grinding the tooth, separating or polishing fillings, etc., consists of a cap-like piece of metal, resembling a round tin cover, about three-fourths of an inch in diameter, with flange wide enough to protect the soft tissues of the mouth. One side of the metal flange is cut out so as to expose the running surface of the disk after the guard has been slipped over the end of hand-piece in position. This allows of grinding the tooth or filling, but the rim prevents contact of disk with tongue, cheek, or other soft tissues of the mouth.

The appliance is ingenious and effective, but seems to obscure, somewhat, the view of the tooth.

REPORT OF THE FOREIGN RELATIONS COMMIT-TEE OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES FOR THE YEAR

1900-1901.

(Reported and adopted at the eighteenth annual meeting held in Milwaukee, Wis., August, 1901.)

The past year has been an exceedingly active one for the Foreign Relations Committee, and the correspondence has been very large. We believe that the influence of the National Association of Dental Faculties has been materially extended during the year, and the good work that has been accomplished by it is becoming more widely known both at home and abroad.

The association has given its Foreign Relations Committee jurisdiction in all foreign educational affairs that affect its interests. This we do not understand to mean that we can dictate what shall be the foreign policy to be followed, but that the committee may advise during the interim between the sessions, reporting its action for approval or disapproval at each annual meeting. This does not in any way interfere with the duties of the Ad Interim Committee, as the authority of the latter has never embraced matters in foreign countries. At the last annual meeting the committee presented a partial schedule of equivalents to be given for attendance on foreign courses of study. The association accepted that and enacted that advanced standing in American schools should only be given foreign students in accordance therewith.

There is a rule of the association that any legislation vitally affecting the members shall not go into effect for one year. This is a wise restriction, for the announcements are usually issued before the time of our annual meeting, and enactments that might be in conflict with the terms legally offered to students could not well be enforced. Your committee found that some foreign students had already been accepted by schools, and consideration given to foreign instruction which might be in conflict with the new regulations. It was therefore deemed best not to give any rulings affecting the annual term for 1900-1901.

But many loyal schools, those whose governors were most anxious to improve the standard of American professional education, have referred all their foreign applications to the committee. In this way it has been learned that foreign students have asked for advanced standing because of attendance, in some instances, on schools that had no existence whatever. Certificates have been presented from countries which have no dental legislation, and in which there is no semblance of a dental educational institution. They usually emanate from some private practitioner whose office is made to assume a sounding title. In other cases they pretend to be granted by some teaching hospital which has no official status.

Your committee has discovered that it is usual for the possessors

of such doubtful credentials to write to a considerable number of schools to learn which, if any, will accept their certificates, and to find out whether some institution will not offer a special inducement. Each dean is assured that others will receive the applicant if he does not. The result is that all of those to whom application has been made are duly informed of the qualifications of suspected students and the probable terms on which they were accepted if the name is found on the lists of any school.

By this it is readily perceived how deans of colleges have been deceived in the past, and how the character of our American schools has been made to suffer for things over which they had no control. The Foreign Relations Committee is prepared to recommend a rating for any foreign school that will submit its curriculum of study and its preliminary requirements of education. This must be approved by the association before becoming effective, and if our schools will govern themselves accordingly the old reproach that we give advanced standing on insufficient qualifications will be forever removed.

A very few schools have manifested some opposition to these regulations. Your committee has, even by some inconsiderate teachers, been accused of an attempt to dominate the colleges. We cannot conceive upon what grounds such a charge should be brought. The committee has done nothing save that which it was positively instructed to do. It has made no rules whatever. It has confined itself to recommending such legislation as it believed absolutely essential to the proper conduct of an educational institution, and if such recommendations have been given legislative enactment, it has tried to carry them into effect, but not otherwise. It has never exceeded its authority nor been unnecessarily aggressive in any of its proceedings. If there exists any reason for criticism of its action on other grounds than opposition to wholesome restraint and the desire to do that which of right ought not to be done, it will be very glad to have such instances pointed out, for its sole ambition has been to carry out the honest wishes of the parent body to which it is responsible.

FRAUDULENT DENTAL DEGREES.

Last year, at the request of the committee, it was relieved of the task of endeavoring to suppress illegal and fraudulent degree-granting institutions, but, as it was already identified with the work, we found that we could not detach ourselves from it entirely. Letters and complaints were persistently directed to us instead of to the Law Committee, to which the subject had been referred. Besides, the diplomas which were sold by the fraudulent schools, and the principal attendance upon those which had a legal existence, but which are unrecognized and unaccepted here, was chiefly in and from foreign countries. Hence its consideration properly belonged to the Foreign Relations Committee, and we could not well refuse to receive the complaints and do what we could in the premises. In our last report we made public a fact that a number of the fraudulent institutions were suppressed and their conduc-

tors imprisoned. We hoped that this would practically close up all of them, but special circumstances have intervened to protect certain ones, and the work is not yet completed.

It is not generally known in this country that thousands of fraudulent diplomas have been sold abroad. Were it possible for foreigners to distinguish between the reputable and the disreputable schools this would not so much matter, but the statutes of the State of Illinois, under which it is possible to incorporate degree-granting institutions which have practically no state supervision or responsibility whatever, and which with legal sanction are, under the great seal of the state, certified as lawfully organized colleges by the Secretary of State of Illinois, simply encourage the fraud. By that certification of the Secretary of State the most unblushing impostures are placed apparently upon the same plane with reputable institutions, and foreigners are deprived of all means by which they can positively determine which is worthy recognition and which is not. As a consequence, some foreign governments have used this condition, either honestly or as a desirable pretext, to discriminate against all Americans, and have refused them permits to practice, and positively prohibited under heavy penalties the employment by any one of the American degree or title. This interdiction is spreading very fast, and, unless something is done to forestall it, soon the possession of an American diploma, whether legitimately or illegitimately obtained, will be a positive detriment to a practitioner. In fact, that is the case to-day in some parts of Germany. The influence of such enactments upon American educational affairs and upon the members of this association may perhaps be imagined. Already prohibition is practically accomplished in Southern Germany, is impending in Northern Germany, has been commenced in France, in Italy, and other countries, and there is sharply threatened a combination of all Europe against the American dental degree and the American dental school.

Much of this may, with a considerable degree of justice, be charged against the State of Illinois. Its own legislation has fostered the fraudulent schools that have brought this disgrace upon us. Its dental profession is not without responsibility. When has any body of its dentists put forth any special efforts to bring about a reform. The state has one of the best state dental societies in existence, with a large surplus in its treasury. For many years it has been a leader in thought, because within its membership has been found a great number of the very ablest men in dentistry; men who have done as much to advance dental practice as have any others. The papers read before that society have challenged the attention of the world. Many of the members must have known something of the opprobrious professional legislation upon the statute-books. Not a voice has been raised in denunciation of the condition, not a word has been uttered, until at the last annual meeting a mild resolution deprecative of the infamous traffic was offered by one unconnected with either schools or boards.

The State Dental Examining Board of Illinois has practically recognized fraudulent and irregular colleges, schools either without

any regular course of instruction or with but a very insufficient one, by admitting their students to the state examination and licensing them to practice, and by practically certifying to the regularity of institutions which every dentist in America knows, or should know, are conducted solely for whatever of revenue there may be in it. The law admits to the state examination for practice anyone who asks for it, and the State Board of Dental Examiners has given the known fraudulent institutions a quasi status by admitting those holding their purchased diplomas to the examination, passing them and giving them the certificate which makes of them regular and legal practitioners. This has been done under the law, but it is Illinois law, and the profession of the state is doing nothing to bring about a reform that professional decency imperatively demands. It is time that the many high-toned professional men of the state were aroused to the stern accountability to which they are liable to be called.

In directing attention to this, your committee must, in justice to the profession of the state, urge that in the opinion of some it has not been wise to admit that which has a real existence, in the hope that the State Board of Health and the medical profession might without scandal succeed in bettering the condition. Surely it must be now apparent to every one that the great work demands the most earnest efforts of every honest dentist of the state. The excellent schools of Chicago have not hesitated to step into the breach when educational interests and professional progress were threatened by the action of other state examining boards. Why should they not attempt a reform in the state law under which their own board acts?*

Last year your committee was able to report that the worst of the fraudulent schools of Chicago had been closed and that their conductors were in prison. That which was done was to a large degree the work of the State Board of Health of Illinois, which brought suit under the United States laws that forbid the use of the United States mails for fraudulent purposes. In no other way could the general government at Washington interfere, because in all educational matters each state is autonomous, that being one of the reserved interests not delegated to the general government. The Board of Health being a state institution, it could commence proceedings in the name of the state, and use state funds for the prosecution of the criminals. It has been appealed to by your committee to take up the fraudulent issue of dental degrees, but the following letter will show that it purposes to confine its labors to the suppression of the sale of medical diplomas:

^{*}Subsequent to the reading of this report at a meeting of the National Association of Dental Faculties, about three thousand dollars was raised within an hour for urosecution of the work of reform. The National Dental Association afterward appropriated one thousand dollars more. Before the close of the Milwaukee meetings, however, the Illinois dentists in attendance actively commenced the work on their own account, and within a week secured the appointment of a new State Dental Examining Board, while a part of the old board were placed under arrest for malfeasance in office, and for general fraudulent practices. Proceedings were also very promptly commenced to annul the charters of certain irregular or fraudulent schools, and the prospect is very encouraging for the entire removal of the reproach that has so long rested upon them, thus verifying the confident predictions of the committee, that when the profession of the state were fully awakened to the real condition it would without delay be purified as by fire.—B.

State Board of Health, State of Illinois, Springfield.
Office of the Secretary, July 13, 1901.

Dear Sir—Your letter of the 3d was received during my absence in the North. In regard to the sale of dental diplomas in Illinois, I cannot give you the letter you desire, for this board is taking no steps whatever to break up the traffic in these degrees. Through the efforts of this board the sale and barter of medical degrees has been entirely suppressed, and the persons who formerly made a business of selling degrees in medicine are now in jail.

With the assistance of the governor of the state and a few medical men we succeeded in getting legislation passed in 1899 by means of which it is a very easy matter to summarily close up any institution selling degrees in medicine, dentistry, or pharmacy. Under this law the notorious "Metropolitan Medical College" has been closed.

There seems to be no reason why the State Board of Dentistry cannot take action in the matter of sale of dental degrees. If the board chooses it can suppress within two weeks the institutions the "diplomas" of which are sold in Munich or elsewhere. Why this board has taken no action on these lines I am unable to say. The State Board of Health sees no reason why it should assume duties which devolve upon another board. If any medical degrees are sold in this state, I am not aware of the fact. If proof of such sale be presented to this board, the institution or institutions in question can be closed within a month.

Very truly yours,

J. A. EGAN, Secretary.

It may thus be seen that we are thrown upon our own resources in the work of closing the institutions engaged in granting fraudulent or irregular dental degrees, and can look to the medical profession for no assistance. Your committee feels confident it can within a short time close up the last of the fraudulent schools, if a sufficient sum of money can be placed at our disposal, and we are so advised by very competent legal counsel. We are prepared to submit a plan of procedure to this association.

AMERICAN EDUCATIONAL AFFAIRS IN EUROPE.

During the past year professional events in Europe having relation to American educational affairs have crowded upon each other's heels in rapid succession. Partly as the result of the appointment of the Foreign Advisory Committees by the association, and more especially through the action of United States governmental agents abroad, an attempt has been made to stem the tide which is so unjustly setting against us in Europe. The papers relating to such action were promptly sent to your committee. We recognized the fact that the purification of the stream must commence at the fountain-head. Practically no fraudulent degrees are sold in America; the countries of Europe are the sea into which the foul tide empties, and the sweetening of the waters cannot be effected there. It is in this country that the remedy must

be applied, and until a healthy public and professional sentiment can be evoked here nothing can be done. The condition has existed for years, and it is constantly growing worse. A pest-hole cannot be cleansed until it is uncovered. A festering wound must be laid open that access can be obtained to its foulest depths. The community must be convinced from whence an infection proceeds before it will abolish the source. Few dentists are aware of what exists in this country. Any man knows that when the honest intelligence of our profession is fully awakened to any enormity, it will move heaven and earth if necessary to put an end to it.

Your committee seized upon the opportunity of the presentation of the most damning proofs coming from official sources to show to the dentists of America what really existed in their midst. Nine out of ten of them had little conception of the condition. When your committee, in its annual report for the year 1898, presented at Omaha, in part laid bare the grossness of the traffic in dental diplomas, the statement was received with incredulity. When that report had been softened in some of its expressions because a part of the committee feared it was exaggerted, it was even then a matter of amazement, and in no place more so than the state of Illinois. But when inquiry revealed the fact that the half had scarcely been told, the deepest indignation was expressed. All the best of the general educational institutions of the state combined to bring about reform. In their wrath and righteous exasperation they went before the legislature, and met with defeat, because their statements were disputed and their motives impugned by the men whom they attacked. They had no fully awakened public sentiment back of them. Very few were aware of the enormity of the fraud. Their facts were met by counterbalancing statements on the part of men whose honesty had not before been impeached; a flank movement was successfully maneuvered; they themselves were accused of improper motives, and the legislature refused to act. Then an attack was made through the United States courts, which were not under the influence of public opinion, and they succeeded in breaking up a part of the iniquity and in getting through an amendment to the law under which it is possible to annul the charter of an openly fraudulent college. But new charters were easily obtained by the same men, and the work was recommenced under another name. The snake at best was scotched, and not killed. The time for another awakening seemed ripe. and your committee applied to the Secretary of State of the United States at Washington for permission to publish the official reports made to it by Consul Worman, of Munich, Germany. We believed that such publication, under the high sanction of the United States government. of official documents would challenge the attention of American people and greatly tend to produce a public sentiment powerful enough to sweep the fraudulent colleges from the face of the earth. Will it be believed? -from high places came public criticisms and protests against any open attempt to break up the infamous traffic which had seriously involved the reputation of every American school!

The name of Consul Worman has been mentioned. Your committee believes that his efforts to rehabilitate the American degree in Europe have been, and promise to be, of the greatest benefits to dentistry, and his work should be sustained by every one. Your committee has not been able to give him all the assistance it desired, because it was this year without the credit upon the treasurer of the association that has been accorded it in the past, but it hopes that the good work may not be hindered by this obstacle in the future. Our national, our professional, our individual reputations are at stake. The good name of every member of this association is in the balance, and our vindication from a foul blot upon our professional escutcheon must not be a matter of indifference. To assume that this is in the interests of antagonistic foreign governments, that it is doing their dirty police work, is to attempt to cover up and apologize for and justify the villainy that is being done in our names; to assume complicity with the men who are trading on our good deeds, and who under cover of the high reputation of American dentistry, won by us, are endcavoring to foist upon foreign communities a counterfeit that must of necessity throw doubt upon the original.

FOREIGN DENTAL SCHOOLS.

In the face of the fact that a most determined effort is being made in some foreign countries to break down the reputation of American dental schools, and to discredit all American professional education, and in the knowledge that not only are our courses refused any consideration, but sometimes made a pretext upon which to forbid Americans to enter upon practice, this association cannot be accused of illiberality or of professional narrowness should it decline to accept foreign qualifications as a sufficient warrant for practice in this country. There should be some kind of reciprocity in professional affairs, and Americans ought not to be expected to extend all the professional courtesies granted. And yet, exact justice might, in the minds of many, demand that, irrespective of what may be done to us, we should be forgiving, and in return for the buffetings that we receive humbly expose the other cheek to the smiting hand. That course is perhaps highly Christian, but it is not quite in accordance with the impulses of an ordinary human nature. The man or the school that does not have sufficient of self-respect to maintain inalienable rights can scarcely expect to receive the consideration which may be honestly due.

But were this the only reason to be urged against the unquestioned acceptance of all foreign qualifications, we might justly be called churlish and professionally illiberal were we to exclude any one who asked our recognition. America was the first to establish any system of dental education. It embraced a full course of instruction, the whole of which must be covered within the walls of a duly chartered institution devoted to dental instruction. It was provided that all work leading to our special degree must be done under the direct supervision of qualified and accepted teachers. Recognizing the prosthetic department as one of the

most important in dental practice, we insisted that it must have a scientific basis, and not be a matter of mere empiricism. We established the principle that our students must be under the pupilage of one who was acquainted with mechanical laws, and that the teaching of physical science should not be entrusted to possible charlatans. The instructor in mechanics must be responsible to the authority which granted the diploma or certificate of qualification.

The opposite course was pursued in founding the dental system of education in some other countries. Recognizing that many skillful mechanies were outside the pale of the fully qualified men, they practically excluded prosthetics from the college curriculum, classed mere mechanical skill as handicrafture, and permitted its instruction to be received at the hands of irresponsible men. They established a system of apprenticeship which in a manner bound out the student to a dental mechanic, who should give him instruction in one of the most important departments of dentistry. It could not be expected that we should accept such instruction as the equivalent for our full college courses. This condition was the most embarrassing question that came before your committee in the attempt to establish a system of equivalents. Our schools refuse to give to an American student any advanced standing for time spent in the laboratory or office of a practitioner who has not teaching experience and responsibility. The matriculant may have passed years in a dental office, but he must join the freshman class on entering our colleges. Our diplomas or certificates are only granted upon the completion of a definite scholastic course. Occasionally some one has urged that merit and knowledge and skill should be recognized wherever found, and without reference to their source. But that is the very pretext urged by the fraudulent and short-term schools for the granting of their honors after an incomplete course, they themselves conducting the examination, and being the sole judges of that skill and merit.

Why American colleges or college men should desire to shorten the usual term is past comprehension, for it is prejudicial both to their educational and their financial interests. A degree is granted as a reward for the completion of a full course. It is not a recognition of merit. No two men reap the same advantages from a given amount of instruction. One man graduates a skilled, dextrous practitioner, while another is much his inferior. But both have earned their diploma by having successfully completed a prescribed course of study. Many men in the profession do not comprehend this, and blame the schools because a graduate is not as clever and expert in his technical manipulation as the experienced practitioner. Our schools demand the successful completion of a definite course in mechanics. We cannot recognize the qualifications of any man who has not complied with a reasonable requirement that is demanded of our own graduates. We cannot accept the course of any school that does not require this, and your Foreign Relations Committee has not recommended as the equivalent for ours the certificates of any such schools. The most that we can do for those that accept the apprenticeship system as a part of their course is to give one year's advanced standing for the completion of a full and complete three or four years' pupilage with final graduation.

Under our present legislation it is illegal and irregular for any member of this association to admit to its senior class any student who has not at least the following qualifications:

Successful completion of two full terms in a dental school whose course has been accepted by this association as a full equivalent for its own, and who shall by that school be recommended for such advanced standing.

Admission to the second or junior class of any of our schools can only be permitted to those who have one of the following qualifications:

- (1) Successful completion of one full term in a dental school whose course has been accepted by this association as a full equivalent for its own courses, the student being by that school recommended for such advanced standing.
- (2) Successful completion of the full course of some regular and duly accepted medical school, and graduation with the degree of Doctor of Medicine.

No partial courses are accepted, nor those spent in a school not fully and definitely recognized by this association. Surely we cannot grant more than this to those making application from foreign countries while denying it to our own people.

This principle has governed the Foreign Relations Committee in making its recommendations for the recognition of foreign schools. There have been urgent requests for such recognition, but your committee has not felt itself at liberty to recommend what is not granted to our own schools and people. If any foreign school will demonstrate that its curriculum of study is the full equivalent of our own, and that it has complied with the statute of minimum requirements established by this association at its last annual meeting, your committee will be prepared to examine its claims and to recommend such action to this association as the course of study seems to warrant.

Your committee, in conclusion, points with no ordinary pride to what has been accomplished within the past five years as the result of an attempt to regulate our relations with foreign schools and foreign students, and to the high professional ground on which we now stand. There should be no further complaints, on the one hand that we accept unqualified men from abroad, or on the other that foreigners can come here and, without going through the full course demanded of American students, carry off our honors and claim to be American dentists, the colleagues of those who have completed our full curriculum of a broad course of dental study.

The foreign advisory boards, appointed with the approval of this association, have proved to be useful auxiliaries in the carrying out of our system of education. In Europe they have completed an organization, and will henceforth work together in harmony. They must exercise an important and wide influence in educational affairs, and their

action cannot but be for good. They will guard the interests of those holding the American degree, and help to prevent it from being unworthily conferred. Your committe has made some further appointments in countries heretofore unrepresented, which it reports for approval. It is very much to be desired that at each of our annual meetings representatives from these foreign advisory boards should be in attendance whenever possible, and we recommend the enactment of a standing resolution giving to such regular representatives a seat in our meetings with the usual privileges of the floor.

REPORT CONCERNING FOREIGN EQUIVALENTS AS AMENDED FOR THE YEAR 1901.

Were your committee to follow the precedent set by most foreign countries, no consideration would be given to their qualifications. Although America set an example to all the world in establishing a definite curriculum of instruction for dentists, in organizing schools for their theoretical and practical training, thereby erecting into a recognized profession or specialty that which previously was mainly empiricism and charlatanry, no official recognition of its special curriculum has ever been given by the dentists of foreign countries, although in great numbers they have attended our schools to obtain the advantages offered by that curriculum.

Your committee believes it to be neither fraternal, professional, nor just to adopt the same course, but thinks it both expedient and right to extend proper recognition to whatever can be received as an equivalent for our own courses. It must not be forgotten, however, that the system of dental instruction in Europe varies very widely from that of our special American schools. Instruction separate from that afforded by the medical schools or universities is very rare, and the practical training which forms a part of our curriculum is usually given by private preceptors. Your committee does not feel at liberty to recommend the acceptance of an oral and theoretical course as the equivalent for one including practical work. We cannot believe that the certificates of private and irresponsible practitioners can by us be accepted as any part of a college course, and hence we have given them little consideration.

Australia.

A very complete report from the various colonies of Australia and New Zealand has been made by the advisory board appointed for those countries. It would appear that in most of the colonies there is no dental legislation, but Victoria has lately secured a law analogous to that of England, and in Melbourne a dental school has been organized whose curriculum, from the partial syllabus furnished, seems to be a comparatively broad one. The institution has been but recently established, and your committee has been unable as yet positively to determine whether in all respects it complies with our minimum requirements. When this shall have been definitely determined, we shall be prepared to recommend to this body some proper action.

In the provinces of Western Australia and Tasmania no dental legislation has been secured.

There is a dental law in New Zealand, and the member of the advisory board from that province has furnished your committee with an abstract of it. There are no dental schools in the province.

Switzerland.

This is a republic analogous to our own country in some respects, the federal union being composed of separate cantons. There are some excellent universities which offer certain facilities for dental study, but their practical instruction, we believe, cannot be accepted as an equivalent for that offered by American dental colleges. Your committee recommends that holders of the Swiss national diploma be given one year's advanced standing in the schools of this association, but that no consideration be at present extended to holders of the cantonal qualifications.

Spain.

The Spanish requirements in medicine are very high, but your committee has not learned that there are any dental schools, or dental departments of universities, whose course of instruction can be accepted as the full equivalent for the instruction given in American dental colleges.

France.

In accordance with the recommendations of the advisory board for this country, your committee recommends as follows:

That one year's advanced standing be given to students possessing the French government diploma of "Chirurgien Dentiste" who have completed the three years' course in either the "Ecole Dentaire de Paris" or the "Ecole Odontotechnique," and that the same consideration be given the French diploma of Doctor of Medicine.

That in all cases the American preliminary examinations as to educational requirements be demanded, and that a sufficient acquaintance with the English language to enable the student to comprehend lectures be an essential.

Germany and Austria.

Your committee recommends that students speaking the English language, who have taken the full dental course in German or Austrian universities, be eligible for reception in the second-year classes of American dental colleges, provided it be shown that they have had at least two semesters of competent college instruction in practical laboratory and operative work.

Italy.

There are, we believe, no schools in Italy which have courses that can be accepted as equivalent to those of our American dental schools. The instruction given in the medical schools your committee believes to be too exclusively general in its character to form an acceptable course in dentistry for American students.

Holland and Belgium.

In these countries the title of dentist is obtained by passing a practical examination in the theory and practice of dentistry. There are no separate dental schools, and we are not sufficiently informed of the comprehensiveness of the syllabi of the universities to offer any recommendations concerning them.

Great Britain.

Your committee recommends that all students who shall have finished the complete course in any recognized English. Irish, or Scotch dental school or hospital, shall be eligible for reception as second-year students in American dental colleges upon proof of their having taken as a part of such foreign course two years of instruction in a properly equipped dental laboratory and dental infirmary connected or affiliated with such dental school or hospital, and which requires the successful completion of the work deemed essential by recognized American schools, as formulated in the minimum requirements for foreign dental schools accompanying this report. We further recommend that for the present no consideration be given to partial courses in any of the dental schools of Great Britain.

Denmark, Sweden, and Norway.

Sweden has one dental school, which is the dental department of the Caroline Medico-Chirurgical Institute of Stockholm. Instruction is given by five professors of the medical department, and there are three dental professors, occupying respectively the chairs of dental surgery, operative dentistry, and dental prosthetics and orthodontia. From the assurances given, your committee believes that its graduates should be permitted to enter the second-year class of recognized American dental colleges, provided they shall have complied with our requirements concerning mechanical laboratory work.

Your committee has not sufficient knowledge concerning any school in Denmark or Norway to warrant further recommendations at present.

Japan.

There is one dental school in Japan. It confers no degree, but gives a certificate which entitles the holder to government examination, the same as if he had studied with some practicing dentist. As the instruction is personal and the school is quite irresponsible, your committee believes that no consideration can be given to those completing its courses.

Mexico.

There is a medical school in the City of Mexico which purports to give dental instruction. Your committee cannot learn that it is of such a character as will enable it to be accepted as the equivalent for a course in an American dental college.

Canada.

There is but one school in the Dominion, so far as your committee is aware, whose courses can be accepted as an equivalent for those of our own

colleges, and that is at present a member of this body, so that it requires no special ruling.

Other Foreign Countries.

Concerning the educational status of other nations, your committee is not in possession of sufficiently definite information to warrant any action whatever. We have no knowledge of the existence of any courses of instruction which can be accepted as an equivalent for the courses in the institutions having membership in this body, and therefore advanced standing in our schools cannot in justice to our own schools be granted save in the instances above enumerated.

REPORT CONCERNING MINIMUM REQUIREMENTS.

That a proper standard may be adopted by which the relative value of the courses in foreign dental schools whose students offer them as equivalents for a part of the instruction given in the colleges of this association may be determined, your committee recommends the approval of the following as the minimum of requirements demanded:

- The college must require of matriculants a preliminary education which is the full equivalent of that demanded by the schools of this association.
- 2. The college must demand of students full attendance upon at least three full annual courses (not semesters) of lectures of not less than seven calendar months each in separate years, covering all the studies proper to a full dental curriculum.
- 3. The college must possess a bacteriological laboratory, with sufficient of equipment for instruction in a competent course in bacteriology, which must form a part of its curriculum of study.
 - 4. The same must be required in chemistry, histology, and pathology,
- 5. There must be a technic laboratory in which shall be taught the proper manipulation for the insertion of all kinds of fillings for teeth, the preparation and filling of the roots of teeth, the tempering and shaping of instruments, the drawing of wire and tubing for cases in orthodontia, and the cutting of bolts and nuts.
- 6. There must be prosthetic laboratories sufficiently equipped for teaching all kinds of prosthetic work, and the construction of all the approved prosthetic appliances.
- 7. There must be a sufficiently equipped laboratory for instruction in making crowns and bridges, and the construction of appliances used morthodontia.
- 8. There must be a properly equipped infirmary or surgery for the reception of patients, upon whom each and every student shall be required individually to perform all and enough of the operations necessary in dental practice thoroughly to qualify him for the successful pursuance of his profession.
- 9. Complete records of the work done by each student, of his attainments at sufficient and full examination in each subject of the curriculum of study, of his attendance and deportment during the course, must be permanently kept.

Country.

10. No credit must be allowed for any work not done under the immediate supervision of instructors connected with or especially approved by the college, and who are in direct affiliation with the faculty.

FOREIGN ADVISORY BOARDS.

The following is a list of the countries for which advisory boards have been designated, and the appointments and nominations so far as made:

College.

Postoffice Address.

Name.

Great Britain. Wn. Mitchell, D.D.S. Univ. of Michigan. 39 Upper Brook St. London. England. London. England. London. England. 1. London. England. 2 London. England. 2 London. England. 2 London. England. 2 London. England. 3 Upper Brook St. England. 3 Upper Brook St.	Country.	Name.	College.	Postoffice Address.
Great Britain. W. E. Royce, D.D.S. Phila. Dental Coll. 2 Lonsdale Gardens, England. Great Britain. B. J. Bonnell. S. England. Holland and Belgium. J. E. Grevers, D.D.S. 13. Ouden Turfmarket, Amsterdam. Holland and Belgium. Ed. Rosenthal, D.D.S. Phila. Dental Coll. 13. Ouden Turfmarket, Amsterdam. Holland and Belgium. C. Vander Hoeven, D.D.S. Phila. Dental Coll. 13. Ouden Turfmarket, Amsterdam. Holland. 14. Septimental, Swe. & Nor'y. D.S. Phila. Dental Coll. 15. Sturgatan 24, Stock-Sturgatan 24, Stoc				39 Upper Brook St.,
Great Britain B. J. Bonnell 94 Cornwall Gardens, So. Kensington, London.	Great Britain	W. F. Royce, D.D.S	Phila. Dental Coll	2 Lonsdale Gardens, Tunbridge Wells,
Holland and Belgium. J. E. Grevers, D.D.S. Harvard Univ. Holland and Belgium. Ed. Rosenthal, D.D.S. Harvard Univ. Hand. Holland and Belgium. Denmark, Swe. & Nor'y. Elof Forberg, D.D.S. Phila. Dental Coll. Brussels, Belgium. Der Hager. D.D.S. Denmark, Swe. & Nor'y. L. P. Vorslund-Kjaer, D.D.S. Denmark, Swe. & Nor'y. Denmark	Great Britain	B. J. Bonnell		194 Cornwall Gardens, So. Kensington,
Holland and Belgium. G. Vander Hoeven, D.D.S. Denmark, Swe. & Nor'y. Denmark. Dental Coll. Statestour. Denmark. Dental Coll. Dent. Dental Coll. Statestour. Dental Coll. Dental Coll. Statestour. Denmark. Dental Coll. Statestour. Dental Coll. S	Holland and Belgium	J. E. Grevers, D.D.S)	13 Oude Turfmarket, Amsterdam, Hol-
Holland and Belgium. C. Vander Hoeven, D.D.S. Phila. Dental Coll. Denmark, Swe. & Nor'y. Elof Forberg, D.D.S. Phila. Dental Coll. Denmark, Swe. & Nor'y. Elof Forberg, D.D.S. Denmark, Swe. & Nor'y. Denmark, Swe. & Nor'y. S. S. Anderson, D.D.S. Denmark, Swe. & Nor'y. Denmark, Swe. & Nory. Denmark, Swe. & Denmark, Swe. & Nor'y. Denmark, Swe. & Denmark, Swe. & Nor'y. Denmark, Swe. & Denmark,	Holland and Belgium	Ed. Rosenthal, D.D.S	Harvard Univ	19 Boul, du Regent,
Denmark, Swe. & Nor'y, Deńmark, Swe. & Norway, Deńmark, Swe. & Norw	Holland and Belgium Denmark, Swe. & Nor'y.	C. Vander Hoeven, D.D.S. Elof Förberg, D.D.S	Phila. Dental Coll	Der Haag. Sturegatan 24, Stock-
Russia H. V. Woolison, D.D.S. N. Y. Coll. Dent. 10 Quai de l'Amaranti, St. Petersburg, Russia Theo. Weber, D.D.S. On Phila. Dental Coll. St. Petersburg, Russia Geo. Th. Berger, D.D.S. Univ. Pennsylvania. St. Petersburg, Russia Univ. Pennsylvania. Univ. Pennsylvania. St. Petersburg, Russia. Univ. Pennsylvania. Univ. Victoriastrasse 30, Berlin, Germany. Berlin Germany. Berlin Germany. Berlin Germany. On Szigmondi, M.D., Ch.D. Univ. Vienna Schmerlingplatz 2, Vienna I. Austria. Univ. Vienna Schmerlingplatz 2, Vienna I. Austria. Austria and Hungary. Dr. Jos. Arkövy. Univ. Vienna Schmerlingplatz 2, Vienna I. Austria. Prankgase 2, Vienna	Denmark, Swe. & Nor'y. Denmark, Swe. & Nor'y.	S. S. Anderson, D.D.S L. P. Vorslund-Kjaer,	Univ. Pennsylvania	Christiania, Norway.
Russia H. V. Woolison, D.D.S. N. Y. Coll. Dent. 10 Quai de l'Amaranti, St. Petersburg, Russia. Russia Geo. Th. Berger, D.D.S. N. Y. Coll. Dent. Helsingfors, Finland. Russia Geo. Th. Berger, D.D.S. V. Y. Coll. Dent. Helsingfors, Finland. St. Petersburg, Russia. Germany W. D. Miller, D.D.S. Univ. Pennsylvania. Victoriastrasse 30, Berlin, Germany. Germany Freidrich Hesse, D.D.S. N. Y. Coll. Dent. St. Chere den Linden, Berlin Germany. Germany Freidrich Hesse, D.D.S. N. Y. Coll. Dent. Germany. Austria and Hungary O. Szigmondi, M.D., Ch.D. Univ. Vienna Schmerlingplatz 2, Vienna I. Austria. Austria and Hungary Dr. Jos. Arkövy Univ. Vienna. IX. Austria. Italy and Greece. Albert T. Webb, D.D.S. Univ. Pennsylvania. Italy and Greece. Tullio, Avanzi Nominated Univ. of Michigan IV a Tornabuoni, Florence Italy. France George B. Hayes, D.D.S. Univ. of Michigan IV a Tornabuoni, Florence Italy. Spain and Portugal. R. H. Portuondo, D.D.S. Univ. Pennsylvania. Spain and Portugal. Florestan Aguilar, D.D.S. Univ. Pennsylvania. Spain and Portugal. T. J. Thomas, D.D.S. Boston Dent. Coll. St. Alban Anlage, Basel, Switzerland. Switzerland and Turkey Paul J. Guye, D.D.S. Phila. Dental Coll. St. Alban Anlage, Basel, Switzerland. Japan, China and India. J. Ward Hall, D.D.S. Phila. Dental Coll. I Lyon Terrace, Liverpool Street, Sydney. Australia & N. Zealand Dr. A. P. Merrill. Phila. Dental Coll. I Lyon Terrace, Liverpool Street, Sydney.		D.D.S	Fina. Dental Con	
Russia Geo. Th. Berger, D.D.S. N. Y. Coll. Dent. St. Petersburg, Russia. Germany W. D. Miller, D.D.S. Univ. Pennsylvania. Germany C. F. W.Bödecker, D.D.S. N. Y. Coll. Dent. St. Petersburg, Russia. Germany C. F. W.Bödecker, D.D.S. N. Y. Coll. Dent. St. Petersburg, Russia. Germany C. F. W.Bödecker, D.D.S. N. Y. Coll. Dent. St. Univ. Pennsylvania. Germany Freidrich Hesse, D.D.S. N. Y. Coll. Dent. St. Univ. Dent. St. Univ. Pennsylvania. Austria and Hungary D. Szigmondi, M.D., Ch.D. Univ. Vienna Berlin Germany. Germany D. Szigmondi, M.D., Ch.D. Univ. Vienna Schmerlingplatz 2, Vienna IX, Austria. Austria and Hungary Dr. Jos. Arkövy Univ. Buda-Pesth. Vaczi-utca, Budapest, Hungary. Italy and Greece. Albert T. Webb, D.D.S. Univ. Pennsylvania. Italy and Greece. Tullio, Avanzi. Nominated Univ. of Michigan Dr. S. A. V. Elliott, D.D.S. Univ. of Michigan. France J. H. Spaulding, D.D.S. Univ. of Michigan. Dr. Spain and Portugal. R. H. Portuondo, D.D.S. Prains. France. Spain and Portugal. Florestan Aguilar, D.D.S. Spain and Portugal. Florestan Aguilar, D.D.S. Boston Dent. Coll. Serrano 5, Madrid, Spain. Switzerland and Turkey. Theo. Frick, D.D.S. Univ. Pennsylvania. Switzerland and Turkey. Switzerland and Turkey. Paul J. Guye, D.D.S. Dent. Coll. Dent. Shanghai, China and India. Japan, China and India. Japan	Russia	H. V. Woolison, D.D.S	N. Y. Coll. Dent	10 Quai de l'Amaran- ti, St. Petersburg,
Germany W. D. Miller, D.D.S. Univ. Pennsylvania. Victoriastrasse Belin, Germany. Germany C. F. W.Bödecker, D.D.S. N. Y. Coll. Dent. 55 Unter den Linden, Berlin Germany. Freidrich Hesse, D.D.S. N. Y. Coll. Dent. 55 Unter den Linden, Berlin Germany. Germany Freidrich Hesse, D.D.S. N. Y. Coll. Dent. 55 Unter den Linden, Berlin Germany. Austria and Hungary O. Szigmondi, M.D., Ch.D. Univ. Vienna Germany. Rud. Weiser, M.D., Ch.D. Univ. Vienna I. Austria. Frankgasse 2, Vienna IX. Austria. Frankgasse 2		Theo. Weber, D.D.S Geo. Th. Berger, D.D.S	N. Y. Coll. Dent Phila. Dental Coll	Helsingfors, Finland. St. Petersburg, Rus-
Germany C. F. W.Bödecker, D.D.S. N. Y. Coll. Dent. 55 Unter den Linden, Berlin Germany. Austria and Hungary O. Szigmondi, M.D., Ch.D. Univ. Vienna Germany. Austria and Hungary Rud. Weiser, M.D., Ch.D. Univ. Vienna IX. Austria. Austria and Hungary Dr. Jos. Arkövy Univ. Buda-Pesth Vaczi-utca, Budapest, Hungary. Italy and Greece Albert T. Webb, D.D.S. Univ. Pennsylvania Rome, Italy and Greece A. V. Elliott, D.D.S. Univ. of Michigan IO Via Tornabuoni, France George B. Hayes, D.D.S. Univ. of Michigan IO Via Tornabuoni, France G. A. Roussel, D.D.S. N. Y. Coll. Dent. 74 B'd Haussmann, Paris, France. Spain and Portugal R. H. Portuondo, D.D.S. Univ. Pennsylvania Parso de Recoletos 3, Madrid, Spain and Portugal T. J. Thomas, D.D.S. Phila Dental Coll. St. Alban Anlage, Basel, Switzerland. Switzerland and Turkey. Theo. Frick, D.D.S. Univ. Pennsylvania III Tornalestrand. Switzerland and India Japan, China and India Japan, China and India Australia & N. Zealand. Alfred Burne, D.D.S. Phila Dental Coll. 1 Lyon Terrace, Liverpool Street, Sydney. Australia & N. Zealand. Herbert Cox, D.D.S. Univ. of Michigan III Dental Coll. 52 Collins St. Melbourne. Vac Turich St. Leipzig, Germany. Schemerlingplatz 2, Vienna IX. Austria. N. Y. Coll. Dent. W. Veclina II. Austria. Vaczi-utca, Budapest, Hungary. Vaczi-utca, Budapest, Hungary. Vaczi-utca, Budapest, Hungary. Vaczi-utca, Budapest, Hungary. Vaczi-utca, Budapest, Univ. Of Michigan III. Austria. Spain Spain III. Van Tornabuoni, Florence Italy. Spain III. Van Tornabuoni, Florence Italy. Spain Spain III. Van Tornabuoni, Florence Italy. Spain III. Van T	Germany	W. D. Miller, D.D.S	Univ. Pennsylvania	Victoriastrasse 30,
Germany	Germany	C. F. W.Bödecker, D.D.S.	N. Y. Coll. Dent	55 Unter den Linden,
Austria and Hungary. O. Szigmondi, M.D., Ch.D. Univ. Vienna. Schmerling platz 2, Vienna Austria and Hungary. Rud. Weiser, M.D., Ch.D. Univ. Vienna. IX. Austria. Austria and Hungary. Dr. Jos. Arkövy. Univ. Buda-Pesth. Vaczi-utca, Budapest, Hungary. Italy and Greece. Albert T. Webb, D.D.S. Univ. Pennsylvania. 87 Via Nazionale, Rome, Italy and Greece. Tullio, Avanzi. Nominated Rome, Italy and Greece. A. V. Eliott, D.D.S. Univ. of Michigan. 10 Via Tornabuoni, Florence Italy. 39 Boul. Malesherbes, Paris, France. France G. A. Roussel, D.D.S. Univ. of Michigan. Paris, France. France G. A. Roussel, D.D.S. Univ. of Michigan. Paris, France. Paris, France. Paris, France. T. J. Thomas, D.D.S. Univ. Pennsylvania. Paris, France. Spain and Portugal. Florestan Aguilar, D.D.S. Phila. Dental Coll. Spain. Synizerland and Turkey. L. C. Bryan, D.D.S. Boston Dent. Coll. St. Alban Anlage, Basel, Switzerland. Switzerland and Turkey. Paul J. Guye, D.D.S. Univ. Pennsylvania. 12 Rue de Candolle, Geneva, Switzerland India. J. Ward Hall, D.D.S. Phila. Dental Coll. 12 Rue de Candolle, Geneva, Switzerland Alfred Burne, D.D.S. Phila. Dental Coll. 11 Lyon Terrace, Liverpool Street, Sydney.	Germany	Freidrich Hesse, D.D.S	N. Y. Coll. Dent	Goethe Str. 6, Leipzig,
Austria and Hungary Rud. Weiser, M.D., Ch.D. Univ. Vienna Frankgasse 2, Vienna IX. Austria. Austria and Hungary Dr. Jos. Arkövy Univ. Buda-Pesth Vaczi-utca. Budapest, Hungary. Tally and Greece Albert T. Webb, D.D.S Univ. Pennsylvania 87 Via Nazionale, Rome, Italy and Greece Tullio, Avanzi Nominated Univ. of Michigan 10 Via Tornabuoni, Florence Italy. France	Austria and Hungary	O. Szigmondi, M.D., Ch.D.	Univ. Vienna	Schmerlingplatz 2, Vi-
Austria and Hungary. Dr. Jos. Arkövy. Univ. Buda-Pesth. Vaczi-utca, Budapest, Hungary. Italy and Greece. Albert T. Webb, D.D.S. Univ. Pennsylvania. 87 Via Nazionale, Rome, Italy. Italy and Greece. Tullio, Avanzi. Nominated. 10 Via Tornabuoni, Florence Italy. France. J. H. Spaulding, D.D.S. Univ. of Michigan. 10 Via Tornabuoni, Florence Italy. France. George B. Hayes, D.D.S. Univ. of Minnesota. 39 Boul. Malesherbes, Paris, France. France. G. A. Roussel, D.D.S. Univ. of Michigan. Paris, France. Spain and Portugal. R. H. Portuondo, D.D.S. Univ. Pennsylvania. Paris, France. Spain and Portugal. Florestan Aguilar, D.D.S. Phila. Dental Coll. Serrano 5, Madrid, Spain. Switzerland and Turkey. L. C. Bryan, D.D.S. Boston Dent. Coll. St. Alban Anlage, Basel, Switzerland. Switzerland and Turkey. Paul J. Guye, D.D.S. Univ. Pennsylvania. 14 Tonhallenstrasse, Zurich, Switzerland. 15 Rasel, Switzerland. 16 Geneva, Switzerland. 17 Rapan, China and India. J. Ward Hall, D.D.S. Phila. Dental Coll. 12 Rue de Candolle, Geneva, Switzerland. 19 Rapan, China and India. Australia & N. Zealand. Alfred Burne, D.D.S. Phila. Dental Coll. 1 Lyon Terrace, Liverpool Street, Sydney. Australia & N. Zealand. Inchest Cox, D.D.S. Univ. of Michigan. 216 Oueen St., Auck-	Austria and Hungary	Rud. Weiser, M.D., Ch.D.	Univ. Vienna	Frankgasse 2, Vienna
Italy and Greece Tullio, Avanzi Nominated Italy and Greece A. V. Elliott, D.D.S Univ. of Michigan. 10 Via Tornabuoni, France J. H. Spaulding, D.D.S Univ. of Minnesota 39 Boul. Malesherbes, Paris, France. France George B. Hayes, D.D.S Univ. of Michigan. Paris, France. G. A. Roussel, D.D.S N. Y. Coll. Dent 74 B'd Haussmann, Paris, France. Spain and Portugal R. H. Portuondo, D.D.S Univ. Pennsylvania Paseo de Recoletos 3, Madrid, Spain. Spain and Portugal T. J. Thomas, D.D.S Bhila. Dental Coll Serrano 5, Madrid, Spain. Switzerland and Turkey. L. C. Bryan, D.D.S Boston Dent. Coll St. Alban Anlage, Switzerland and Turkey. Paul J. Guye, D.D.S Univ. Pennsylvania 14 Tonhallenstrasse, Zurich, Switzerland. Switzerland and Turkey. Paul J. Guye, D.D.S Penn. Dent. Coll 12 Rue de Candolle, Geneva, Switzerland Japan, China and India. Japan, China and India. Japan, China and India. Australia & N. Zealand. Alfred Burne, D.D.S Phila. Dental Coll 1 Lyon Terrace, Liverpool Street, Sydney. Australia & N. Zealand. Herbert Cox, D.D.S Univ. of Michigan. 216 Oueen St., Auck-	Austria and Hungary	Dr. Jos. Arkövy	Univ. Buda-Pesth	Vaczi-utca, Budapest,
Italy and Greece.Tullio, Avanzi.NominatedItaly and Greece.A. V. Elliott, D.D.S.Univ. of Michigan.10 Via Tornabuoni, Florence Italy.France.J. H. Spaulding, D.D.S.Univ. of Minnesota.39 Boul. Malesherbes, Paris, France.France.George B. Hayes, D.D.S.Univ. of Michigan.Paris, France.France.G. A. Roussel, D.D.S.N. Y. Coll. Dent.74 B'd Haussmann, Paris, France.Spain and Portugal.R. H. Portuondo, D.D.S.Univ. Pennsylvania.Paseo de Recoletos 3, Madrid, Spain.Spain and Portugal.Florestan Aguilar, D.D.S.Phila. Dental Coll.Serrano 5, Madrid, Spain.Switzerland and Turkey.L. C. Bryan, D.D.S.Boston Dent. Coll.St. Alban Anlage, Basel, Switzerland.Switzerland and Turkey.Theo. Frick, D.D.S.Univ. Pennsylvania.14 Tonhallenstrasse, Zurich. Switzerland.Switzerland and Turkey.Paul J. Guye, D.D.S.Penn. Dent. Coll.12 Rue de Candolle, Geneva, SwitzerlandJapan, China and India.J. Ward Hall, D.D.S.Shanghai, China.Japan, China and India.J. Ward Hall, D.D.S.Phila. Dental Coll.1 Lyon Terrace, Liverpool Street, Sydney.Australia & N. Zealand.Dr. A. P. Merrill.Phila. Dental Coll.52 Collins St. Melbourne.Australia & N. Zealand.Herbert Cox, D.D.S.Univ. of Michigan.216 Oueen St., Auck-	Italy and Greece	Albert T. Webb, D.D.S	Univ. Pennsylvania	87 Via Nazionale,
France J. H. Spaulding, D.D.S. Univ. of Minnesota. 39 Boul. Malesherbes, Paris, France. France George B. Hayes, D.D.S. Univ. of Michigan. Paris, France. Spain and Portugal. R. H. Portuondo, D.D.S. Univ. Pennsylvania. Paris, France. Spain and Portugal. Florestan Aguilar, D.D.S. Phila. Dental Coll. St. Alban Anlage, Basel, Switzerland and Turkey. L. C. Bryan, D.D.S. Boston Dent. Coll. St. Alban Anlage, Basel, Switzerland. Switzerland and Turkey. Paul J. Guye, D.D.S. Univ. Pennsylvania. 14 Tonhallenstrasse, Zurich, Switzerland. Switzerland and Turkey. Paul J. Guye, D.D.S. Penn. Dent. Coll. 12 Rue de Candolle, Geneva, Switzerland. Japan, China and India. J. Ward Hall, D.D.S. Phila. Dental Coll. 1 Lyon Terrace, Liverpool Street, Sydney. Australia & N. Zealand. Dr. A. P. Merrill. Phila. Dental Coll. 52 Collins St. Melbourne. Australia & N. Zealand. Herbert Cox, D.D.S. Univ. of Michigan. 216 Oueen St., Auck-	Italy and Greece	Tullio, Avanzi	Nominated Univ. of Michigan	10 Via Tornabuoni,
France	France	J. H. Spaulding, D.D.S	Univ. of Minnesota	39 Boul. Malesherbes,
Spain and Portugal R. H. Portuondo, D.D.S. Univ. Pennsylvania. Paseo de Recoletos 3, Madrid, Spain. Spain and Portugal Florestan Aguilar, D.D.S. Phila. Dental Coll Serrano 5, Madrid, Spain. Spain and Portugal T. J. Thomas, D.D.S. Boston Dent. Coll St. Alban Anlage, Basel, Switzerland. Switzerland and Turkey. Theo. Frick, D.D.S. Univ. Pennsylvania. 14 Tonhallenstrasse, Zurich, Switzerland. Switzerland and Turkey. Paul J. Guye, D.D.S. Penn. Dent. Coll 12 Rue de Candolle, Geneva, Switzerland. Japan, China and India. J. Ward Hall, D.D.S. Shanghai, China. Japan, China and India. Australia & N. Zealand. Alfred Burne, D.D.S. Phila. Dental Coll 1 Lyon Terrace, Liverpool Street, Sydney. Australia & N. Zealand. Inc. Phila. Dental Coll 52 Collins St. Melbourne. Australia & N. Zealand. Herbert Cox, D.D.S. Univ. of Michigan. 216 Oueen St., Auck-	France	George B. Hayes, D.D.S. G. A. Roussel, D.D.S	Univ. of Michigan N. Y. Coll. Dent	Paris, France.
Spain and Portugal Florestan Aguilar, D.D.S. Phila. Dental Coll Serrano 5, Madrid, Spain and Portugal T. J. Thomas, D.D.S Boston Dent. Coll St. Alban Anlage, Basel, Switzerland. Theo. Frick, D.D.S Univ. Pennsylvania 14 Tonhallenstrasse, Zurich. Switzerland. Switzerland and Turkey. Paul J. Guye, D.D.S Penn. Dent. Coll 12 Rue de Candolle, Geneva, Switzerland 12 Rue de Candolle, Geneva, Switzerland India. J. Ward Hall, D.D.S Shanghai, China. Japan, China and India. Australia & N. Zealand. Alfred Burne, D.D.S Phila. Dental Coll 1 Lyon Terrace, Liverpool Street, Sydney.	Spain and Portugal	R. H. Portuondo, D.D.S	Univ. Pennsylvania	Paseo de Recoletos 3,
Switzerland and Turkey. L. C. Bryan, D.D.S. Boston Dent. Coll. St. Alban Anlage, Basel, Switzerland. Theo. Frick, D.D.S. Univ. Pennsylvania. 14 Tonhallenstrasse, Zurich. Switzerland. 12 Rue de Candolle, Geneva, Switzerland 12 Rue de Candolle, Geneva, Switzerland Japan, China and India. J. Ward Hall, D.D.S. Shanghai, China. Japan, China and India. Australia & N. Zealand. Alfred Burne, D.D.S. Phila. Dental Coll. 1 Lyon Terrace, Liverpool Street, Sydney. Australia & N. Zealand. Inc. A P. Merrill. Phila. Dental Coll. 52 Collins St. Melbourne. Australia & N. Zealand. Herbert Cox, D.D.S. Univ. of Michigan. 216 Oueen St., Auck-	Spain and Portugal	Florestan Aguilar, D.D.S.	Phila. Dental Coll	Serrano 5. Madrid.
Switzerland and Turkey. Theo. Frick, D.D.S Univ. Pennsylvania. 14 Tonhallenstrasse, Zurich. Switzerland, Switzerland and Turkey. Paul J. Guye, D.D.S Penn. Dent. Coll	Spain and Portugal Switzerland and Turkey.	T. J. Thomas, D.D.S L. C. Bryan, D.D.S	Boston Dent. Coll	St. Alban Anlage,
Switzerland and Turkey. Paul J. Guye, D.D.S Penn. Dent. Coll	Switzerland and Turkey.	Theo. Frick, D.D.S	Univ. Pennsylvania	14 Tonhallenstrasse,
Japan, China and India. Australia & N. Zealand. Alfred Burne, D.D.S Phila. Dental Coll 1 Lyon Terrace, Liverpool Street, Sydney. Australia & N. Zealand. Dr. A. P. Merrill Phila. Dental Coll 52 Collins St. Melburralia & N. Zealand. Herbert Cox, D.D.S Univ. of Michigan 216 Oueen St., Auck-	Switzerland and Turkey.	Paul J. Guye, D.D.S	Penn. Dent. Coll	12 Rue de Candolle,
Australia & N. Zealand, Alfred Burne, D.D.S Phila. Dental Coll 1 Lyon Terrace, Liverpool Street, Sydney. Australia & N. Zealand, Dr. A. P. Merrill Phila. Dental Coll 52 Collins St., Melbourne. Australia & N. Zealand, Herbert Cox, D.D.S Univ. of Michigan. 216 Oueen St., Auck-	Japan, China and India	I Word Holl D.D.S		Shanghai China
Australia & N. Zealand, Dr. A. P. Merrill	Japan, China and India Australia & N. Zealand.	Alfred Burne, D.D.S	Phila. Dental Coll	1 Lyon Terrace, Liv-
Australia & N. Zealand, Herbert Cox, D.D.S Univ. of Michigan 216 Queen St., Auck-				erpool Street, Syd-
Australia & N. Zealand, Herbert Cox, D.D.S Univ. of Michigan 216 Queen St., Auck-	Australia & N. Zealand.	Dr. A. P. Merrill	Phila. Dental Coll	52 Collins St., Mel- bourne.
	Australia & N. Zealand.	Herbert Cox, D.D.S	Univ. of Michigan	216 Oueen St., Auck-

Country.	Name.	College.	Postoffice Address.
Cuba & W. India Isl'ds. Cuba & W. India Isl'ds.	Rice R. Buchanan, D.D.S.		47 San Francisco St., San Juan, Porto
Mexico & Cent. America. Mexico & Cent. America.	H. W. F. Buttner	Nominated	Rico. Havana, Cuba. City of Mexico. Merida, Yucatan. Puerto Cortez, Hon-
Venez., Colom. & Ecua'r. Venez., Colom. & Ecua'r.	Manuel V. Toledo J. R. Martinez Charles B. Davies, D.D.S.	Nominated	49 Plaza Anibal Pinto,
Peru, Bolivia & Chile Brazil and Guiana Brazil and Guiana	S. R. Salazar, D.D.S C. W. Sparrock, D.D.S J. L. Fordham Julius Weinburger	Chicago Coll. D. Sur. Nominated Nominated	Lima, Peru. Rio de Janeiro, Brazil.
Argentina, Para. & Uru.	J. S. Burnett. J. C. Macartney		Montevideo, Uruguay.

MEMBERSHIP OF THE NATIONAL ASSOCIATION OF DENTAL FACUL-TIES, AT ADJOURNMENT, JULY, 1901.

The following is a list of the dental colleges of America which at the present time are members of the National Association of Dental Faculties, whose diplomas and tickets alone are recognized and received by the members of the association:

AlabamaBirminghamBirming	ham Dental College.
	Dept. of College of Physicians and
Surg	eons.
CaliforniaSan FranciscoUniversi	ty of California, College of Den-
tistry	
CaliforniaLos AngelesCollege	of Dentistry, Univ. of Southern
Camorina	of Dentistry, Univ. of Southern
	ornia.
ColoradoColorado	College of Dental Surgery.
District of Columbia. WashingtonDental 1	Department of National University
District of Columbia Washington	Department of Ivational University.
District of Columbia. Washington Dental	Department Columbian University.
District of Columbia. WashingtonDental	Department of Howard University.
District of Columbia. WashingtonGeorgeto	wn University Dental Depart.
meni	
	Dental College.
GeorgiaSouthern	Dental College.
Illinois	College of Dental Surgery
Illinois	of Dentisters III
TillinoisChicagoCollege	or Dentistry, University of Illinois.
Illinois	stern University Dental School.
IndianaIndianapolisCentral	College of Dentistry.
IndianaIndianapolisIndiana	Dental College
Torus	Dental Conege.
Iowa CityUniversi	ty of Iowa, College of Dentistry.
IowaKeokukKeokuk	Dental College, Dental Depart-
men	of Keokuk Medical College
ment	of Keokuk Medical College.
KentuckyLouisvilleLouisvil	le College of Dentistry, Depart-
KentuckyLouisvilleLouisvil	le College of Dentistry, Depart-
Kentucky Louisville Louisville Louisville New Orleans New Or	le College of Dentistry, Depart- of Cent. U. of Ky.
Kentucky Louisville Louisville Louisville New Orleans New Or	le College of Dentistry, Depart- of Cent. U. of Ky.
Kentucky Louisville Louisvil Louisiana New Orleans New Or Maryland Baltimore Baltimore	le College of Dentistry, Depart- of Cent, U. of Ky. leans College of Dentistry. e College of Dental Suggery
Kentucky Louisville Louisvil Louisiana New Orleans New Or Maryland Baltimore Baltimore	le College of Dentistry, Depart- of Cent, U. of Ky. leans College of Dentistry. e College of Dental Suggery
Kentucky Louisville Louisville Louisiana New Orleans New Or Maryland Baltimore Baltimore Baltimore Maryland Baltimore Dental	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland
Kentucky Louisville meni Louisiana New Orleans New Or Maryland Baltimore Baltimor Maryland Baltimore Baltimor Maryland Baltimore Dental Massachusetts Boston Dental	le College of Dentistry, Depart- of Cent, U, of Ky, leans College of Dentistry, e College of Dental Surgery, e Medical College, Dental Dept. Dept. University of Maryland, school of Haryard University
Kentucky Louisville meni Louisiana New Orleans New Or Maryland Baltimore Baltimor Maryland Baltimore Baltimor Maryland Baltimore Dental Massachusetts Boston Dental	le College of Dentistry, Depart- of Cent, U, of Ky, leans College of Dentistry, e College of Dental Surgery, e Medical College, Dental Dept. Dept. University of Maryland, school of Haryard University
Kentucky Louisville Louisvil Louisvil Louisiana New Orleans New Or Maryland Baltimore Baltimor Maryland Baltimore Baltimor Maryland Baltimore Dental Massachusetts Boston Dental Massachusetts Boston Tuft's C	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. school of Harvard University. ollege Dental School.
Kentucky Louisville Louisvil Louisiana New Orleans New Or Maryland Baltimore Baltimon Maryland Baltimore Baltimon Maryland Baltimore Dental Massachusetts Boston Dental Massachusetts Boston Tuft's C Michigan Ann Arbor Dental	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. ee College of Dental Surgery. ee Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. oldege Dental School. College University Michigan.
Kentucky Louisville Louisvil Louisiana New Orleans New Or Maryland Baltimore Baltimor Maryland Baltimore Baltimor Maryland Baltimore Dental Massachusetts Boston Dental Massachusetts Boston Tuft's C Michigan Ann Arbor Dental Michigan Detroit Dental	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. ollege Dental School. College University Michigan. College University Medical College University Medical Collegery Medical Collegery Medical Collegery Department Detroit Medical Collegery of Collegery Medical Collegery Collegery Collegery Medical Collegery Colleg
Kentucky Louisville Louisvil Louisiana New Orleans Natyland Baltimore Baltimor Dental Massachusetts Boston Dental Massachusetts Boston Tuft's College Nichigan Ann Arbor Dental Michigan Detroit Dental Minnesota Minneapolis College	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry. Department of Medi-
Kentucky Louisville Louisvil Louisiana New Orleans Natyland Baltimore Baltimor Dental Massachusetts Boston Dental Massachusetts Boston Tuft's College Nichigan Ann Arbor Dental Michigan Detroit Dental Minnesota Minneapolis College	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry. Department of Medi-
Kentucky Louisville Louisvil Louisiana New Orleans Natyland Baltimore Baltimor Dental Massachusetts Boston Dental Massachusetts Boston Tuft's College Nichigan Ann Arbor Dental Michigan Detroit Dental Minnesota Minneapolis College	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry. Department of Medi-
Kentucky Louisville Louisvil Louisvila New Orleans Ne	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. Ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College.
Kentucky Louisville	le College of Dentistry, Depart- of Cent, U, of Ky, leans College of Dentistry, e College of Dental Surgery, e Medical College, Dental Dept. Dept. University of Maryland, School of Harvard University, ollege Dental School, College University Michigan, Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College, Dental College,
Kentucky Louisville	le College of Dentistry, Depart- of Cent, U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. Sollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College. Dental College. Sims Dental College.
Kentucky Louisville	le College of Dentistry, Depart- of Cent, U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. Sollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College. Dental College. Sims Dental College.
Kentucky Louisville Industry Louisville Louisville Louisville Louisville Louisville Louisville Louisville Louisville Louisville Remainder Remainder Louisville Remainder Remainder Louisville Remainder Re	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. Ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College.
Kentucky Louisville Industry Louisville Louisville Louisville Louisville Louisville Louisville Louisville Louisville Louisville Remainder Remainder Louisville Remainder Remainder Louisville Remainder Re	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. Ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College.
Kentucky Louisville Louisvill Louisiana New Orleans N	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College. Dental College. Dental College. Dental College, Dental
Kentucky Louisville Louisvill Louisiana New Orleans New Orleans Maryland Baltimore Baltimor Baltimore Baltimor Baltimore Baltimor Baltimore Baltimor Baltimore Baltimor Baltimore Baltimor Dental Massachusetts Boston Dental Massachusetts Boston Tuff's C Michigan Ann Arbor Dental Michigan Detroit Dental Michigan Detroit Dental Minnesota Minneapolis College Cine, Missouri Kansas City Kansas Missouri Kansas City Western Missouri St. Louis Marion-Missouri St. Louis Marion-Missouri St. Louis Missouri Nebraska Omaha Dental New York New	le College of Dentistry, Depart- of Cent, U, of Ky, leans College of Dentistry, e College of Dental Surgery, e Medical College, Dental Dept. Dept. University of Maryland, school of Harvard University, ollege Dental School, College University Michigan, Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College, Dental College, Sims Dental College, Dental College, Dental College, Dental College, Dental Depart- of Washington University, Department University of Omaha. The College of Dentistry
Kentucky Louisville Louisvill Louisiana New Orleans New Orleans Maryland Baltimore Baltimor Baltimore Baltimor Baltimore Baltimor Baltimore Baltimor Baltimore Baltimor Baltimore Baltimor Dental Massachusetts Boston Dental Massachusetts Boston Tuff's C Michigan Ann Arbor Dental Michigan Detroit Dental Michigan Detroit Dental Minnesota Minneapolis College Cine, Missouri Kansas City Kansas Missouri Kansas City Western Missouri St. Louis Marion-Missouri St. Louis Marion-Missouri St. Louis Missouri Nebraska Omaha Dental New York New	le College of Dentistry, Depart- of Cent, U, of Ky, leans College of Dentistry, e College of Dental Surgery, e Medical College, Dental Dept. Dept. University of Maryland, school of Harvard University, ollege Dental School, College University Michigan, Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College, Dental College, Sims Dental College, Dental College, Dental College, Dental College, Dental Depart- of Washington University, Department University of Omaha. The College of Dentistry
Kentucky Louisville	le College of Dentistry, Depart- of Cent, U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. Sollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College. Dental College. Sims Dental College. Dental College, Dental Depart- of Washington University. Department University of Omaha. rk College of Dentistry. rk Dental School
Kentucky Louisville Louisvill Louisiana New Orleans New York New	le College of Dentistry, Depart- of Cent. U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. Ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College. Dental College. Dental College. Dental College, Dental Department.
Kentucky Louisville	le College of Dentistry, Depart- of Cent, U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College. Dental Department rk Dental School. ty of Buffalo, Dental Department. ti College of Dental Surgery
Kentucky Louisville Louisvill Louisiana New Orleans New York New	le College of Dentistry, Depart- of Cent, U. of Ky. leans College of Dentistry. e College of Dental Surgery. e Medical College, Dental Dept. Dept. University of Maryland. School of Harvard University. ollege Dental School. College University Michigan. Department Detroit Medical Col. of Dentistry, Department of Medi- University of Minn. City Dental College. Dental Department rk Dental School. ty of Buffalo, Dental Department. ti College of Dental Surgery

Ohio Columbus Ohio Medical University, Dental Dept. Ohio Cleveland Western Reserve University, Dental Dept. Oregon Portland North Pacific Dental College. Pennsylvania Philadelphia Dental Dept., University of Pennsylvania Pennsylvania Philadelphia Medico-Chir. College of Phila. Dept. of
Pennsylvania Philadelphia Pennsylvania College of Dental Surgery. Pennsylvania Philadelphia Philadelphia Dental College. Pennsylvania Pittsburg Pittsb. Dent. College, Dept. of West. Univ.
Tennessee Nashville Dental Department, University of Tenn. Tennessee Nashville Dept. of Dent. of Vanderbilt University. Tennessee Nashville School of Dentistry of Meharry Medical
College, Dept. of C. T. Col. Virginia Richmond University College of Medicine and Surgery, Dental Department. Wisconsin Milwaukee Medical College, Dental Dept. Canada Toronto Royal Coll. of Dental Surgeons of Ontario.

WILLIAM C. BARRETT,

208 Franklin st., Buffalo, N. Y.

JOHN D. PATTERSON,

Ninth and Walnut sts., Kansas City, Mo.

TRUMAN W. BROPHY,

126 State st., Chicago, Ill.

M. W. FOSTER,

9 W. Fayette st., Baltimore, Md. Eugene H. Smith,

283 Dartmouth st., Boston, Mass.

Foreign Relations Committee.

NEW PUBLICATIONS.

Oral Surgery: A Text-book on General Medicine and Surgery as Applied to Dentistry. By Stewart LeRoy McCurdy, A. M., M. D., Pittsburg. The Calumet Publishing Co., 1901. Price net, \$3.00.

In this book of 368 pages the author treats the subject as follows:

Part I. General Principles; Acute Infections and Results; Surgical Fevers; Erysipelas; Shock; General Diagnosis; Diseases of the Vascular System; Asepsis and Antisepsis; Anesthetics; Principles in Operations, etc.

Part II. Diseases of the Structures of the Oral Cavity; Diseases of the Autrum; Diseases and Injuries of the Gums and Alveolar Process; Diseases of the Tongue; Diseases, Injuries and Neuroses of the Face; Congenital Defects of Face and Mouth; Diseases of Bone; Tuberculosis; Venereal Diseases; Diseases of Salivary Glands; Neuralgia; Tumors; Aukylosis; Fractures; Dislocations; Plastic Surgery; Prothesis.

It is the idea of the author that such a work should include all subjects under the heads of general medicine and surgery that could in any way be of interest to the practicing dentist.

While there is much to commend in the work, there is an incompleteness in description, manipulation or treatment noticeable here and there throughout the entire book, and it has every appearance of having been hurriedly compiled.

The proof reading must have been carelessly done, for typographical errors are common and some materially alter the sense and are misleading.

The word "glottis" is given for inflammation of the tongue instead of the correct word, "gossitis."

Ludwig's "angia" should be "angina. Aterasia, acna, fernucle, tic doleureaux, are other samples of the many incorrectly spelled words, and some of the proper names also are misspelled.

* * *

Interrogations in Dental Metallurgy. By J. H. Beal, Sc., D. Pittsburg: Calumet Publishing Co., 1901. Price net, 60 cents.

This little book contains 358 questions in metallurgy, leaving blank space opposite each question for the student to insert the answer. The object is to ensure a certain amount of industry on the part of the student in searching for answers to the questions and at the same time specifically directing his attention to such portions of the subject as are of the greatest practical importance.

* * *

Dental Medicine: A Mancal of Dental Materia Medica and Therapeutics. By F. J. S. Gorgas, A. M., M. D., D. D. S., Professor of the Principles of Dental Science, Oral Surgery, etc., in the University of Maryland. Seventh edition, revised and enlarged. Philadelphia: P. Blakiston, Son & Co., Publishers, 1901. Price, cloth, net \$4.00.

Our readers are so well acquainted with this work that it is not necessary to enumerate the various drugs treated, but we will outline what has been added to the present edition: Vapocaine, Chloretone, Enzymol, Euformol, Phenalgin, Airol, Actol, Glucide, Glutol, Orthoform, Caffein, Digitalis, Sozoiodol, Liquid Air, Nitrous Oxide and Oxygen, Pressure Anesthesia, by Compressed Air, Sulpho-Carbolate of Zinc, Silver Sulpho-

Carbolate, Anestile, Treatment of Dental Caries with Silver Nitrate, etc.

A new table of doses of medicinal agents has been substituted for the one in former editions. Important additions have been made to many articles, such as those on Inflammation, Diagnosis and Treatment of Mouth Affections, embracing Abscess, Ulceration, Caries and Necrosis of Bone, Gangrene, Septicemia, Pyemia, Opening Abscesses, Erosion of Teeth, Stomatitis, Sterilizing Instruments, Administering Anesthetics Agents, both local and general, together with important additions, including recent investigations on the physiological and medicinal actions and properties, and Therapeutic and Dental uses of many of the remedies before noticed in this work.

The book contains over 600 pages of text, the same general arrangement being followed as in other editions.

While, perhaps, this arrangement is not an ideal one for a text-book, it is the best work we have to-day and a fund of information can be obtained from it.

SOCIETY.

GEORGIA STATE DENTAL SOCIETY.

At the last meeting of the Georgia State Dental Society, held at Macon, the following officers were elected:

President-H. H. Johnson.

First Vice-President—A. M. Jackson.

Second Vice-President—E. A. Tigner.

Corresponding Secretary—O. H. McDonald.

Recording Secretary—S. H. McKee.

Treasurer—H. A. Lowrance.

Journal Editor-W. H. Weaver.

Executive Committee—J. C. Brewer, D. H. Patterson, C. C. Campbell, B. F. Hair, H. W. Walker.

Executive Board—John H. Coyle, D. D. Atkinson, Thomas

Cole, E. H. Reid, B. F. Sims.

Next place of meeting, Macon, Ga., second Tuesday in June, 1902.

OHIO DENTAL JOURNAL.

VOL. XXI.

November, 1901.

No. 11.

CONTRIBUTIONS.

SYPHILITIC MANIFESTATIONS IN THE MOUTH.

BY F. M. CASTO, D. D. S., M. D., COLUMBUS, OHIO.

I have never heard the above subject discussed at any length, and as it appeals to me as one of great significance, I have selected it for consideration.

There are many authors who claim that syphilis is of remote antiquity, and that, in the historical literature of Greece and Rome and the ancient documents of Africa, China and Egypt, records among the people systemic results of certain genital lesions. On the other hand it is claimed by many that the disease did not exist in Europe previous to the advent in 1492, of Columbus and his companions to America, and that some of them became infected here where the disease existed among the American aborigines, and carried it across the water. The time of its existence, however, matters little to us at the present time; we do know that it is the common belief among the laity that the disease has existed almost since the creation of man. and that it is a punishment from God upon man for his sinful doings. They, too, consider it to be a loathsome and incurable disease, and refer to it with perfect horror, second, possibly, only to leprosy itself.

It is well, perhaps, that they are not acquainted with the real facts, as to how many innocent persons suffer from this disease through the carelessness of others. Hundreds and even thousands of people are thus infected to-day among the populous of modern civilization. It certainly would be a severe blow to any of us should we accidentally or carelessly transmit the disease to one of our patients; it therefore behooves us to be scrupulously clean, both as regards our own person and the instruments we use.

I will first speak of the modes of infection in the manner in which we as dentists are interested.

Hydes' definition, "Syphilis is a general infectious disorder transmitted from one individual to another, by both contact and inheritance, involving one or several organs of the body, due to the toxic effect of the invasion of the bodily tissues by a morbific germ, the identity of which has not as yet been completely established."

First, Infection by Heredity: By this we mean that the disease is transmitted from the mother to the child in utero, and that the mother has been infected previous to fecundation; it seldom if ever occurs that the child is infected from the father alone. The theory heretofore generally accepted, that the disease may manifest itself in the second or third generation, is disproved greatly by a series of investigations made by eminent specialists, who claim in nearly all cases a thorough history of the case resulted in the discovery that the child of the first generation either acquired the disease just previous to birth (the mother having been infected about the same time), or soon after birth from one of the many modes of infection.

The manifestations of hereditary syphilis which interests us, are those of the mucous membrane; this membrane, as in the acquired disease, displays bullous lesions, mucous patches, pustules, and tubercles. In the profound dyscrasic state of weakly infants these lesions often rapidly degenerate into the most formidable ulcerations. Owing to the weak state of the child, the mouth is kept habitually open, and the secretions are readily desiccated by the currents of air passing through, caus-

ing, as it were, an obstructive rhinitis, which greatly encumbers the respiratory tract, giving rise to catarrhal symptoms, viz: peculiar "snuffles," feeble voice, breathing entirely through the mouth, etc. These symptoms occur early in life, and are not of much significance to us, only with reference to the complete history of a given case.

The mucous patch of the mouth is the most common affection of the mucous membrane; the patches are usually circumscribed, slightly raised or elevated, with a reddened areola. These sometimes coalesce, thus involving large areas which may hypertrophy, or may break down by ulceration, and be covered by a disagreeable and foul slough; this may develop the second or third year or later. It is of much importance to know that the virus from such patches is as infectious as from the acquired form of the disease. Gummatous infiltrations occur during the third year and later. They are prominent roundish patches, nearly always circumscribed, and more often upon the hard palate and posterior wall of the pharynx; these may break down or degenerate, and form large destructive ulcers which resist treatment very stubbornly, and when cured leave large cicatrices of a deforming and obstructive character. The virus of these ulcers is very virulent and infectious.

The teeth in inherited syphilis are characteristically altered; when they are affected in the first dentition they are imperfectly formed and greatly retarded in evolution; in the second dentition we have what is termed the Hutchinson teeth, being described by this man in 1863. The superior central incisors being principally involved, showing semi-lunar notches at the incisal edge. The laterals are often peg shape, unusually small, the cuspidata also being distorted and unsightly; the color is generally that of a yellowish brown, muddy hue. The enamel is often imperfectly formed, and small pits are to be found on the labial surfaces. The molars are imperfectly developed, and present on the occlusal surfaces many cusps, pits, fissures, etc., having no regularity in outline whatever.

These changes in the teeth when associated with parenchymatous keratitis, and the scars of former fissures at the angle

of the mouth are considered by many as pathognomonic of inherited syphilis.

I will next speak of acquired syphilis. The modes of infection are both immediate and mediate—immediate when by direct contact, such as sexual intercourse, kissing, biting, accidental contacts, which occur in the service of a dentist, physician, the midwife, and where persons are manacled together. Mediate when carried by some article, such as household utensils, articles of domestic use—syringes, combs, tooth-brushes, articles employed in the professions,—namely, dentists' instruments, razors, vaccinating needles, lancets, etc., and by other articles too numerous to mention. Infection may occur on any surface of the body where an excoriation exists. The primary lesion is that of a hard chancre; this appears at the site of inoculation from ten to thirty days after exposure. It is characterized by an incubative period preceding its appearance, a sclerosed, indurated or dense thickened base, a ragged and overhanging border, non-irritating, non-destructive, heals of its own accord, and always single, no definite time as to when it may disappear. This lesion is of highly infectious character, the virus being very virulent and tenacious as regards the length of time it may be effective. When the lesion is on the lip it generally appears at the juncture of the skin and mucous mem-

The study of syphilis as it affects the mouth is of much importance. On account of the liability of injury and irritation to the soft parts from many causes, such as the smoking and chewing of tobacco, indiscriminate use of tooth picks, mastication of hard food, sharp corners of decayed teeth, deposits upon the teeth, dental work improperly done, etc., the mouth is quite frequently implicated, the symptoms being persistent and significant, being too in a location which is decidedly favorable for the transmission of the disease.

The first symptoms I desire to call your attention to is the macular syphiloderm. This may appear along the gingivolabial furrows, the pillars of the fauces and over the arch of the hard and soft palate in the form of well defined areas of a

vivid or dusky red color, or in punctate spots of a bright color over the surface of the mucous membrane. These spots generally disappear early with proper treatment; they may remain, however, and furnish a basis for the evolution of other lesions. Complication of these patches sometimes arise, presumably from the irritant effect of some of the causes given above, and as a result ulceration follows, which generally assumes the shape and size of the original macule.

The symptom of greatest importance and the one most frequently met with, is the papular syphiloderm or the mucous patch. These lesions may be single or multiple; they usually first appear as reddened macules in well defined patches which soon undergo changes, acquiring an opaline hue, presenting the appearance of having been touched over the surface with nitrate of silver. They vary greatly in size, involving surfaces from the size of a split pea to the extent of the entire inner surface of the cheek or lip. They are often elevated perceptibly above the surrounding level, and are roundish, oval and irregular in outline and usually painful; the most susceptible points of attack are the inner side of lower lip and gum opposite, inner side of the cheek opposite the molar teeth near Steno's duct and in the crevices posterior to the last molars. These patches are accompanied by a secretion that is highly infectious and which has a more or less offensive odor. They generally respond quickly to proper treatment; complications may arise, however, and ulceration take place as a result, the ulcers resisting treatment to a considerable extent and being of a destructive nature, penetrating into the deep structures and spreading over larger areas.

Leucoplasia, or smokers' patches of the mouth, are not definitely differentiated from epithelioma and lichen planus. I quote the following from a prominent writer: "In male patients, almost exclusively in smokers, but also in others, appear patches, spots, fan-shaped lesions and bands of a dull, whitish tint, smooth and shining or roughened and beset with medium sized nodules, which are similar to mucous patches and which occur in the mouth of syphilitic patients where such

lesions have existed. They may occur as highly exaggerated hypertrophy of the implicated tissues in which a strip of dead white, thickened and exceedingly dry tissue covers the dorsum of the tongue, which may be so bulky as to seriously interfere with the movements of this organ.

Gummata or syphilitic tumors occur in all parts of the mouth. They may be circumscribed or diffused infiltrations, may develop rapidly with prominent symptoms or come on insidiously. They generally first appear as a small, round nodule, slightly tender upon pressure, increasing in size until degeneration takes place and destruction of tissue ensues. These lesions attack the bone as well as the soft tissues, and when the hard palate is affected perforation into the nasal cavity often results. The maxillae are sometimes attacked so viciously that large portions of bone have to be removed. In conclusion I desire to say that I have not given the treatment, as it would consume too much space, but have given the above facts for their diagnostic value.

THREE POINTS THAT HAVE BEEN HELPFUL TO ME.

BY G. A. KENNEDY, D. D. S., KENT, OHIO.

When preparing a cavity for the insertion of a gold filling or in finishing the same, that "terrible sensation" can, in a great degree be done away with by holding the tooth firmly with a pair of forceps or by placing a solid piece of metal against the tooth.

It is the vibration that is so disagreeable, and your patients will be gateful to you if you will try this on them.

Another point has also been helpful to me. When for any reason the process has been badly exposed and the patient is given much pain thereby, it can be instantly relieved by saturating a pellet of cotton in tincture of benzoine and covering the exposure. This same medicament will also afford great relief

in the painful eruption of third molars. Also in the cutting of children's teeth.

Then, lastly, when your carborundum wheels have worn unevenly, or become glazed over, take an old clock spring and hold it firmly against the rapidly revolving wheel and with a little perseverance you will soon have a stone as good and sharp as new.

AMALGAM.

BY A. H. ALLEN, D. D. S., PAISLEY, ONTARIO.

Among the list of filling materials we have at present amalgam has deservedly won a popular place. It has been changed in formula frequently, and each change was supposed to be an improvement on the last, but very often the change was simply a retreat from the position already attained.

It has been tested in tubes and in the mouth by progressive dentists for very many years, and yet there is room for improvement. Perfection is not yet reached, though when Dr. Black introduced his new formula from which so many amalgams are now claimed to be made it was at first supposed that a great advance had been made, but, as has often been demonstrated, test tubes are not the mouth, and once more we find that those amalgams that have stood the test for over twenty-five years, such as Sterling, are not to be cast aside and will not be put down. Sterling is easy to manipulate, holds its color well, will not set so rapidly as the black amalgams, thus giving more time to build up large contour fillings or those difficult of access.

Poor manipulation and leaving too much mercury is the cause of a large number of failures in any of these standby amalgams. I favor the mixing in the hand and pressing out with the fingers as the most efficient method of pressing out the mercury.

An amalgam that does not shrink in the mouth nor expand is water tight, keeps its color, is easy to manipulate, etc., is one that should not be lightly given up. I have found such a one in Sterling. There may be others. I would like to have expression from others of my professional brethren along this line.

DIAGNOSIS AND SURGICAL TREATMENT OF EMPYEMA OF THE MAXILLARY SINUS.*

BY W. H. G. LOGAN, D. D. S., CHICAGO, ILL.

In the paper the essayist referred to the cause of empyema of the maxillary sinus and said that he did not believe that we had direct penetration of septic matter from the dental aveolar abscesses, as often has been claimed, yet that direct penetration of septic matter does occur at times from this cause cannot be denied.

He described the diagnostic symptoms of the disease and advocated the use of the electric light to assist diagnosis.

In regard to the surgical treatment, he believes in a buccal opening on a line with the floor of the antrum.

The objections to operating through the socket of an extracted tooth were enumerated as follows:

- I. The frequent needless loss of the tooth.
- 2. The uncertainty of gaining access to the lowest point of the floor.
- 3. The liability of missing the sinus entirely and entering the nasal fossa.
- 4. The removal of diseased hard and soft tissue is accomplished with more difficulty and made improbable in many cases if the opening is not greater in size than the space occupied by one tooth.
- 5. An ocular examination of the sinus cannot be made through the ordinary size opening used for the reception of the tube.

The ideal operation to control empyema of the sinus should have the three following points:

^{*}Abstract of paper read at Nat. Dental Assn., 1901.

- 1. The opening made large enough to allow of an ocular examination.
- 2. That the position of this opening be such that it will afford the best natural drainage and not demand extraction of any tooth.
- 3. The employment of some non-irritating method to maintain the original opening until one can secure a normal condition of the diseased part as by the employment of a guttapercha plug.

In treating, the parts should be irrigated daily, until cured, employing carbolic acid and nitrate of silver solutions, carrying the fluid with a one or two-ounce syringe, forcing the fluid in until it comes through the nose. If the artificial opening is made very large and low enough for perfect drainage, keeping opening open and irrigated regularly, success will crown your efforts.

DISCUSSION.

DR. G. V. I. Brown, of Milwaukee: It is surprising that we do not more often have antral empyemia from alveolar abscess. The reason, however, is found in the fact that the abscesses do not puncture the fibrous mucous membrane which lines the floor of the antrum, but lift it up and burrow along between the bone and this membrane.

I would advocate in all cases of empyemia of the antrum making large openings into the antrum. Many of these cases can be cured by establishing a simple but free drainage. But where curetting is necessary, a sufficiently large opening should be made to allow for this, and for the packing of the antrum with a sterilizing gauze. I do not think the essayist's guttapercha plug can be always used without producing unnecessary irritation. I sometimes dip the last end of my gauze in chloropercha and after it is packed in the cavity it serves to seal the cavity sufficiently."

Dr. T. L. GILMER, of Chicago: In opening the antrum where curetting or other operative procedure is required, I like

to make a large and free opening much the same as has been advocated by the essayist, and of sufficient size to admit the small finger. With the finger the walls of the cavity may be thoroughly explored, and much more satisfactorily than with a probe. Steel probes are more satisfactory, as they reflect sound and help to diagnose the nature of any obstruction.

In opening the antrum never do so with a chisel or any instrument which will shatter the internal wall and leave the chips on the inside attached to the membrane, where they are liable to cause serious inflammation. I always pack the antrum with sterile gauze. I do not use a plug in any case, and I have never been troubled with food crowding into the cavity. Under no circumstances would I use a drainage tube.

Dr. C. P. Fruyn, of Chicago: I approve of large openings, and always make them with burs, in the engine. If the natural opening to the nasal cavity be closed, I should make another at the floor of the antrum, so as to get sure drainage. If there were septi, would curette them away. I often use a soft rubber drainage tube. By turning over a little of the end of the tube it will remain in position without collapsing and without irritation. I use gauze in packing the antrum, but seldom use the iodoform gauze, as it is so offensive in odor and taste.

Dr. W. A. Cook, of Chicago: Harm may be done in antral work by using caustic and irritant drugs for disinfection. Sterilizing solutions of carbolic acid will disintegrate the antral mucous membrane. Iodoform is not only exceedingly offensive, but practically inert. A ten per cent. solution of chinasol is effective for disinfection and stimulating without producing irritation. A compound of carbolic and sulphuric acid is much used in Russian hospitals. The acids decompose and produce a new substance which has very excellent germicidal properties, and it has no deleterious action.

DR. W. C. BARRETT, of Buffalo, N. Y.: I have no use for antiseptics in antral treatment, except so far as antiseptic results

may come from the use of disinfectant or stimulating drugs. For antrai disinfection I have had excellent results from the use of the preparation known as electrozone. It is not only germicidal, but disinfectant and non-irritant. Have also used with good results a compound of nine parts of forty per cent. alcohol to one part of formalin.

Dr. L. E. Custer, of Dayton, O.: I think that large openings to the antrum are frequently made when there is little occasion for them. There are other means of making a diagnosis which will obviate the necessity for so much cutting. The skiagraph made with the X-rays is a most valuable accessory in the diagnosis at least of all conditions of the hidden structure about the body, and of great value in antral work.

Dr. Hungerford, of Kansas City: Drainage will cure any uninfected antral trouble. Drainage with disinfection and antiseptics will cure almost any case of infected antrum. Have found solutions of Formalin most effective of all disinfectants, but should be well diluted. All obstructions on the floor of the antrum should be removed.

DR. LOGAN: I never would use a flexible tube; it will collapse and not drain. An infected antrum cannot be cured by disinfection and drainage. Such cases must be operated upon. The value of the large opening is that it enables a correct diagnosis at the beginning of the treatment. A silver probe is useful to note the form of the antrum, and a steel one should be used to detect obstructions.

THE ATTACHMENT OF IMPLANTED TEETH.*

BY W. C. BARRETT, M. D., D. D. S., BUFFALO, N. Y.

The atachment of the teeth is by a true gomphosis, the root being inserted into the bony socket, the articulating membrane being the pericementum.

^{*}Abstract of paper read before the National Dental Association, Milwaukee, August, 1901.

While the teeth for anatomical purposes may be considered as bone, they are really such modifications as make them analagous, but not homologous to it. The usual conception is that the pericementum of the implanted tooth being destroyed, the union will be analagous to that taking place when the ends of a fractured bone are united. But in the latter instance the sundered or fractured tissues are absolutely homologous—identical in structure. With the implanted tooth there is nothing more than an analogy existing between its cementum and bone.

The pericementum of an implanted tooth being destroyed, the vitality of the cementum, which is dependent upon it for nourishment, must in case of ankylosis be an impossibility. Under such circumstances it is in the highest degree an absurdity to suppose that the ankylozing tissue could become attached to it. The living does not identify itself with the dead; the one functional and the other functionless.

In cases of loss of an implanted tooth, it is always through the formation of asteoclasts and the resorption of the root succeeds precisely as in cases of normal removal of the deciduous teeth.

In the attachment of replanted teeth there must be a new formation of membrane of periosteal and pericemental nature. Of course the possibility of the revivification of the old dead membrane is too absurd for serious consideration.

The plastic or organizable lymph which is the product of inflammation, may as readily be transformed into memberane according to the type of that already in existence, as into bone. Admitting, then, what appears most probable, the formation of a new membrane of pericemental nature, what would naturally follow? The deposition of bone upon the periosteal surface through the formation of osteoblast cells, which will unite with the homologous bony walls and fill the existing cavity. There is no instance, so far as we know, in which there has been any new cemental growth in such cases. The new formation must be confined to the osseous tissue, and the new pericementum must closely invest the root. But the fibres of Sharpey may penetrate the cemental structure as they do the

bone, and thus hold the tooth as firmly as though it had never been extracted.

DISCUSSION.

Dr. T. Fillebrown, of Boston, Mass.: The suggestions of the essayist are somewhat imaginative rather than veritable. There is something to be said in favor of the speculative. A dentist who confines himself to the routine of mechanical or technical practice never gets a broad view of his work. The essayist has not clearly defined the nature of the repair tissue about an implanted tooth, and I don't know that anyone else has. So we can only speculate as to its nature and vitality. From clinical experience all testimony indicates that this tissue does not have an ideal function, and also that it is very liable to destructive influences of disease.

Dr. Jas. Truman, of Philadelphia: I object to the statement of the essayist that bone and cementum are not homologous. The hard tissues are all similar in structure and development. One is smaller in quantity and with a denser matrix, but they are structurally homologous.

Dr. S. H. Guilford, of Philadelphia: From reading of this subject I have come to the conclusion that, when a tooth is implanted with the natural pericemental tissue attached, the tooth becomes invested or attached much the same as are other cavities, which are filled up with deposits of bone by sponge grafting. The new growth of bone fills in the old matrix by a deposit of lime salts in the old membrane. Implanted teeth are often lost because the root is absorbed by the surrounding absorbent cells, rather than being reinforced by a new deposit of bone. Just why the root should be absorbed in the one case and encysted in the other we cannot tell.

Dr. G. V. Black, of Chicago: In the higher animals we never find bone and cementum uniting. When cemental tissue has suffered injury or taken on repair, we always find that the

new deposit is characteristically cemental. It may not be of normal structure, but cicitricial, and still it is characteristically cemental.

Dr. C. N. Petrce, of Philadelphia: Some years ago I experimented in implanting teeth. By cutting a groove or slet in the root I hoped to offer more chance for mechanical attachment. But I found that teeth treated in this way loosened by absorption of the root much sooner than when the roots were left in their natural condition.

Dr. HUNGERFORD, of Kansas City: Periosteum always develops bone, and pericemental tissue can develop nothing but cementum. If in extracting a tooth the periosteum is torn out of the socket, the wound will not heal readily, and when the pericemental membrane is dead or detached no new cement tissue can possibly be formed. So, when a tooth is implanted in an artificial socket, it can never become attached in the normal way, but is simply encysted. If there has been no infection there will surely be no suppuration, and the tooth will become soundly encysted.

Dr. E. Noves, of Chicago: Related a case of where a tooth was accidentally removed from his wife's mouth, and which was immediately replanted, to give good service for fifteen years.

- Dr. E. Bogue, of New York: Related a case where two bicuspids were extracted and immediately replanted. Both became firmly reunited and remained so for many years.
- Dr. J. S. Marshal, of San Francisco: Related a case of extracting accidentally a bicuspid tooth, about fifteen years ago, which he replanted immediately. The pulp never died and the tooth is in good condition to-day.

GERMICIDES AND ANTISEPTICS IN DENTISTRY.

BY GEORGE J. BOWLES, D. D. S., DETROIT, MICH.

The medicinal cabinet of the average dental practitioner contains a dozen or more antiseptics and germicides, each possessing some peculiar fitness for some particular need. The supreme need is a remedy combining in itself the virtues of these various remedies without their detrimental characteristics, and this is asking more than we are apt to think.

This ideal remedy is an active and efficient germicide and antiseptic in all the conditions requiring such agents in dental practice. It is permanently uniform and unaffected by ordinary changes of temperature. It is devoid of toxic, escharotic, irritating, corrosive or staining effects. In odor, taste and color it is neutral, or nearly so. It is of sufficient concentration to fulfil its mission promptly, and yet, in full strength, incapable of doing injury to the tissues. It is freely and quickly soluble in water and has no affinity for delicate steel or other denta! instruments, and last, but by no means least, it is not prohibitive in price. Thus, when he prescribes, the dentist feels reasonably certain that the average patient will procure and use it in effective quantities. This ideal has not yet, perhaps never will be, realized, but many valuable steps have been made in that direction in the past few years, among the most valauble of which is Borolyptol.

As a detergent and antiseptic mouth wash, some such remedy is "ideal," and before operating, the mouth of every patient should be rendered surgically sterile by its use. Especially desirable is this before and after the extraction of teeth. In the preparation of cavities, a 25 per cent, warmed solution is invaluable by syringing out the cavity and washing out the debris loosened by bur, and excavation. In the treatment of alveolar abscess with fistulous opening, perfect results have been obtained by thoroughly flooding the sinus, by way of the root canal with Borolyptol, full strength, and filling immediately. By placing the finger over the mouth of the fistula

while pressure is made on the syringe, the remedy is forced into any cul-de-sac present and the complete sterilization of the whole tract insured. The process must be continued until the remedy comes away clear.

In abscess without fistula after the thorough cleansing of the root canal, if a paste of tannin and borolyptol is worked up into the sack, the root may be filled at once without the slightest fear of trouble.

Many writers who never examine teeth out of the head, claim to go to the apex of any root canal in situ. This is a mistake. Some roots are so small, flattened or tortuous, that no instrument on the market will penetrate their canals to the apex even when the experiment is tried with extracted teeth held in the hand of the operator. And these roots form no small proportion of the whole:

What is here sought is a remedy that will penetrate to the end and completely mummify and render permanently inert what must remain of these inaccessible nerves. Perhaps from the formaldehyde it contains, borolyptol is destined to fill this much felt need. Carbolic acid crystals and camphor gum, equal parts melted together, to which a little tannin is added, works well here, though its penetrative power is slight and only a small portion of the nerve is acted upon. Those cases of soft, spongy, irritable gums yield readily, in most instances, after a careful removal of all deposits from the necks of the teeth, to a free use of borolyptol in connection with the stimulating action of the toothbrush and gum massage.

Whether or not pyorthæa alveolaris can be cured by local treatment, it is certain that the most beneficial results have followed treatment similar to the above. The greatest care is first taken to remove all tartar from the roots, the pockets are then washed with peroxide of hydrogen, followed by borolyptol and a 50 per cent, solution of borolyptol prescribed as a mouth-wash to be used several times daily. Under this treatment the gums largely recover their tone, pus formation is arrested, the unpleasant odor and taste is removed and, if if the patient is careful to fulfil his part, this condition may be

maintained until the accumulating tartar renders the cleaning of the roots again necessary. The hypodermic syringe will always be ready for use if a little borolyptol is drawn up into it and allowed to remain until the syringe is again needed. It will not only be thus kept sterile, but the leather washers will be prevented from drying out, a condition otherwise very frequently occurring. Whenever a gently stimulating, powerfully detergent and antiseptic mouth-wash is desired, borolyptol meets the need. For rendering and maintaining instruments in an aseptic condition, carbolic acid, crystals I part, camphor gum 2 parts, melted together, is preferable. After wiping, the instruments may be dipped in this preparation and laid away without fear of their tarnishing or corroding. This carbolic camphor preparation is a powerful and slightly irritating germicide and antiseptic and is very efficient in the treatment of root canals.

INTERNATIONAL DENTAL FEDERATION: FIRST GENERAL MEETING, HELD AT CAMBRIDGE, ENG., 1901.*

WEDNESDAY, AUGUST 7TH.

The first meeting of the Federation was held in the Physiological Theater, University Museums, on the morning of Wednesday, August 7th, when the Federation was welcomed to Cambridge by the deputy vice-chancellor of the university, Sir Michael Foster, M.D., F.R.S., M.P., who said:

Mr. President and Gentlemen—The vice-chancellor of the University of Cambridge is, unhappily for us, obliged to be away from the university at this period, and in his absence he has asked me to act as his deputy and to bid a most hearty welcome to this important International Dental Federation. I understand that its international character is assured by the participation in it of seventeen different countries, and I assure you that this ancient town feels it a compliment that you have chosen it as one, if not the very first, for your visit. The vice-chancellor trusts that your visit here will be both profitable and agreeable; that it will be profitable will rest mainly with yourselves; that it shall be agreeable we have done our best to insure.

^{*}Report obtained through courtsy of the Editor of the Dental Cosmos.

The President (Dr. Godon). Sir Michael Foster, ladies and gentlemen: Permit me, in the name of my colleagues of the International Dental Federation, to thank the vice-chancellor and the members of the council of the University of Cambridge for the kind hospitality that has been tendered us in these ancient buildings, where generations of students and professors, many of whom have become illustrious, have succeeded one another. No place could be more appropriate for our labors than Trinity College, where the names of Newton, of Roger Bacon, of Macaulay, of Tennyson, of Dryden, and many others present themselves spontaneously to our minds to inspire us and to encourage us in the work of universal union and of international education that we have undertaken.

And no one is better qualified to receive us than Sir Michael Foster,—the learned representative of the vice-chancellor of the university; Sir Michael Foster,—the eminent physiologist whose name has become universally famous through his scientific work. He welcomes us to-day with the same kindness with which, as president of the British Association, he welcomed my countrymen at Dover in 1899. In the name of the Executive Council of the International Dental Federation, and in that of the International Commission of Education, I beg to tender him the sincere expression of our gratitude and respect.

SIR MICHAEL FOSTER. Mr. President and Gentlemen: The ancient university to which I have just had the pleasure of bidding you welcome, and which numbers among its illustrious men, in addition to the names which your president has mentioned, that of William Harvey, presents somewhat medieval features which are lost to other universities,—features medieval, but modified by modern development.

In the earliest days of the university every one who attained the title of Doctor thereby gained the right to teach. He, in those early days, taught in any room he could, in one which he hired for the purpose with his own scanty earnings, or in one which was granted to him by the benevolence of others. His pupils in like manner lived where they could, sometimes in such lodgings as their poor purse could secure, sometimes enjoying the hospitality of benefactors. In the course of time the university became able to make provision for its teachers,—if not for all its doctors, at least for those whom after a while it came to speak of as professors. The students, on the other hand, found it to their profit to gather together in common lodgings, which came to be called hostels.

In most countries other than England, while the provision made by the university for its teachers has enjoyed a large development and all universities have now their lecture theater, their museums, their libraries, their laboratories, and their halls for solemn occasions, the hostels have for the most part been broken up and the students left to shift for themselves. In England, on the other hand, the country having been for centuries secure on the whole from invasion and war's destructive effects, the hostels have flourished more and more. In course of time, after in some instances a temporary connection with religious orders, they have developed into what we here call colleges,—institutions which are hostels in the sense that

they afford lodgings for the students, but which do much more than this, in that, over and above what is done by the university, they afford teaching of a very varied kind, and moreover have entered into special relations with the university itself. Each college, in fact, is in many respects, in Cambridge, a small university within the mother one. Here at Cambridge we have seventeen colleges, in addition to institutions which we consider as and call mere hostels, seventeen small universities having complicated relations with the university itself and carrying out much of the teaching,—performing, in fact, almost all university functions save that of giving a degree.

Such a state of things could not help leading to a certain rivalry between the mother and the seventeen daughters. The prosperity of the colleges was more or less inimical to that of the university, and indeed for many years the university, as distinct from the colleges, somewhat languished. During the last generation or so, however, it has undergone a great development and expansion.

You are gathered to-day in a university which, like its sister university of Oxford, bears more distinctly than do most of the other universities of Europe the stamp of early and medieval times, preserved by the predominance of the colleges. You may recognize this in the direction and respective relations of the studies carried on in the plan. In old times there were three faculties in a university,-Theology, Law, and Medicine, corresponding to the three pursuits which demanded at that time book-learning. For the university was founded for practical purposes, and only these three pursuits as yet needed book-learning; the soldier, the merchant, and the manufacturer could do without it. Later on there grew up a faculty of Arts for the protection and advancement of those more general studies which furnished an introduction to the three special practical studies. He who aspired to be a doctor of theology, law, or medicine spent much time in this common learning before he specialized for his profession. In the course of time the colleges took up with vigor this common learning, leaving the more professional studies to the university itself. Moreover, partly from the circumstances of their origin, their early connection with religious orders, partly from other influences, the colleges, and with the colleges the university, became more and more associated with the church, the Established Church of England. And, indeed, during the early and even the middle part of the past century the university and the colleges seemed to belong to the church. The university became the training-place for nearly all the clergy, and gave them all they needed, while some lawyers only, and even fewer doctors, sought its aid, and received there not a professional, but solely a general education. The last generation has, however, seen great changes. The ties with the church have been loosened, professional studies have been encouraged, and in an increasing manner not clergymen, lawyers, and doctors only, but men of other professions and pursuits,-the engineer, the farmer, the man of business and commerce. the manufacturer, and even the soldier,-are knocking at its doors and seeking for professional as well as general education.

At the present moment you will find this university, like other seats of learning and education, busy with the question, What is the best kind of education for each profession and pursuit?—a question which is also stirring you.

All, I venture to think, are agreed that education should be fashioned after the manner of a cone, starting from a broad basis and narrowing to an apex, for it is the conical bullet that has penetrating powers. In the storm and stress of modern life an all-round education, such as makes a man a mental sphere, is not in itself adequate. Spheres move readily one over the other, and spherical education may be good in society, but it is not suited for a profession. The round ball thrown at a surface may make a hole, but more frequently simply rebounds; whereas the cone may be depended upon to pierce, and the man whose education is conical makes his way.

For each profession the cone should be different, should be fashioned in different ways, though in each case it should start from the same broad basis,—namely, the broad basis of the discipline of the school; that is, the boy's school. I say discipline rather than the learning of the school, for the aim of the schoolmaster should be in all cases the formation of the mind,—the setting of the instrument, not the filling of the bottle. The growth of habits of accuracy, of intentness, and of alertness, this rather than the gathering of mere knowledge of facts is the proper heritage of the school, and for the attainment of these habits it matters not so much what the boy is taught as how he is taught.

From this broad basis of a general school education the narrowing of professional training begins, and we thus come to the question which interests us to-day; that is, the narrowing of training which is best for the dentist, and how shall it best be brought about? On this it would not be fitting that I should do more than offer a few general reflections.

The dentist is a healer; his business lies with a very small portion of the human frame, but that portion, though small, is still human; it has its diseases, its failings, and the dentist has to cure these,—bringing in, whenever it be possible, that best of cures, prevention. The training of the dentist is, in broad terms, the training of a healer.

I remember that in my young days a celebrated surgeon used to say that a surgeon was a physician and something more, meaning that he had to possess a general knowledge of disease such as the physician possesses, but had, in addition, not only to know certain features of disease which the physicians might neglect, but also to acquire a manual dexterity which the physician never needed. In somewhat the same way we may say that the dentist is a surgeon and something more. He has, like the physician, to possess a general knowledge of disease, and to possess, like the surgeon, a certain skill of hand; but besides this he has to acquire a special manual dexterity never called for in a surgeon, and to possess a special knowledge of metallurgy, of chemico-physics, and of branches of mechanics of which neither the physician nor the surgeon need know anything at all.

All knowledge is useful, but the power of the human mind to attain and retain knowledge is limited. We cannot all know everything. The surgeon need not, and if he is to excel greatly in his art cannot know all the minutiæ of the physician's calling; he cannot at once be an accomplished surgeon and complete master of all the details of ausculation and the intricacies of neural pathology. In like manner the dentist, if he is to excel in his art, cannot hope to know all that the physician must know and the surgeon must know. Such being the case, where shall we begin to narrow the education of the dentist? for narrow it we must. How are we to differentiate the training of this special healer from the training of the general healer, the physician or the surgeon?

The training of the doctor is partly general partly special. His special training ought to be as full and as complete as possible; he cannot know too-much, he cannot be taught too much of actual disease and of the various means to combat it. His general training stands on a different footing. The object of this is to enable him to understand and judge the special knowledge which he has to acquire, and though from one point of view no general education can be too wide, from the point of view of the demands of actual life that general education is sufficient which secures the above object and which adequately prepares him for the special training which follows. The main elements of the doctor's general training are these: He must know general pathology, the nature of the processes of disease. This is the central element, the fundamental element, absolutely necessary for the understanding of the true nature of individual maladies, and time spent on this is time wisely and economically spent. Further, he must know physiology and anatomy, but there is no need to carry his studies in these further than is sufficient to enable him clearly and fully to lay hold of the truths of pathology and the laws of health, and to impress on his mind such details of topographic anatomy as will always stand him in good stead in his practice as a physician or a surgeon. Lastly, he must know physics and chemistry, for without a certain knowledge of these he cannot understand physiology, and must remain really ignorant of pathology.

The dentist, like the doctor, needs a general as well as a special training. What can be said about the general education of the dentist? And when I say "dentist" I mean the scientific dentist, he who does his work not by mere rule of thumb, but in the light of scientific knowledge and under the guidance of scientific principles,—for it is with him alone, I take it, that we are interested here. What ought the scientific dentist to undergo in the way of general training?

I imagine that I shall not go far wrong when I say that, in common with the doctor, he ought to possess a general knowledge of pathology. He has to deal with disease, with disease of the teeth and, indeed, of the mouth, and he ought to be well acquainted with the general truths of pathology. He need not be carried further into the details of disease than is necessary to enable him to understand general morbid processes and the common ways in which living structures go wrong. But he may with profit be led to spend some considerable time on that division of pathology which teaches how many of the ills that flesh, even the bardest part of it,

is heir to, are the handiwork of minutest organisms, are scourges laid on by invisible rods. What we now call bacteriology must, so far as it deals with disease, be an essential part of every dentist's training. Beyond this the dentist needs, like the doctor, such knowledge of physiology and anatomy as will enable him to lay hold securely of pathology, but in his case the details of the topographic anatomy of the body at large are not needed, and may fitly give place to a knowledge of the anatomy and physiology of the teeth, more special and more complete than is ever needed by any doctor. Such a general training is one more or less common to both the dentist and the doctor. But the former has also need of a general—that is, of a preparatory—training wholly uncalled for in the case of the latter.

The days when the public mainly judged of the merits of a dentist by the celerity and freedom from pain with which he robbed his patient of possessions which could never be really replaced are long gone by. The art of the dentist is now pre-eminently a constructive and preservative art. And the dentist, if he is to succeed in construction, must know the nature of the materials which he constructs, and the physical, mechanical laws of the construction which he attempts. If, in order to grapple adequately with disease, he must share in the general training of the doctor, he must, in order to grapple with the difficulties of repairing the ravages of disease which he and others have failed to prevent, share in another general training of a wholly different kind. He must be inducted into some, at least, of the mysteries and metallurgy; he must have a scientific knowledge of the chemical and physical properties of the varied materials which he uses for construction, and he must learn something of what may be described as a special branch of engineering. He must be trained in ways and things wholly unknown to the physician and the surgeon. Moreover, if he is to hope to succeed in his profession, he must know the things of which I am speaking not only theoretically, but practically. Just as the young doctor begins his practical hospital duties by dressing wounds and acting as a nurse, as the general who commands armies has at the beginning to take his place as a private in barrack square drill, as the young engineer puts on his blouse to go through the workshop, so the young dentist must spend an allotted time at the bench.

Obviously the training of the dentist, much as there always must be in it common with that of the doctor, must be narrowed in its own way if the cone of education is to be brought to an effective apex.

Doubtless the dental profession has much to gain in many ways by a close alliance with the medical profession. The position of being a branch of the great and powerful medical profession gives it advantages many and great, and it would be folly to cast away these advantages by demanding a divorce unless that divorce be really necessary.

One object, and one object only, ought to be the aim of the training of a dentist,—to make him as sure and as efficient a workman as possible. If, as seems probable, in the rush of men and things ordinary minds under ordinary circumstances cannot achieve that efficiency and at the same time pursue a complete medical education, then some separation seems inevitable.

The separation, however, should not be a divorce, but simply a deviation or differentiation, a claim for a separate apex hand in hand with the acknowledgement of a common basis.

(To be continued.)

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

SOLDERING MADE EASY.*

BY H. W. NORTHROP, D.D.S., NEW YORK.

In the selection of a blowpipe, it would be useless for me to name any particular kind as the best, for many good ones are in the market, and you can use almost anything when thoroughly accustomed to the working of it, but bear in mind these few hints: see that there is perfect combustion of the gas, from the very finest blue point flame to the full blazing flame. Do not allow any flow of gas to burn at the point, that is not overcome by the force of air from the bellows. The movement of the regulating valve is also important; see that the mechanism is simple, easy and quick, doing its work with the least possible movement of the fingers. A blowpipe that is small, light and graceful in the hand is far preferable to some that are so heavy and thick at the point as to almost tire the arm in using it, and brings your hand so far away from your work. I would never advise any one to get one of those stationary affairs that sit on the table, expecting the work to move up to it and dance about while being soldered, for your work must lie quiet to avoid danger of dropping and breaking; and here is a good time to recommend you all to learn to handle the blowpipe with the left hand, leaving the right to handle solder, borax, etc. The blowpipe which has done all of my work for the past few years is

^{*}Extract from Items of Interest.

only the tip of a once simple affair, and the valve action is just squeezing the rubber tubing which supplies the gas.

THE BELLOWS.

There is little to select in the matter of bellows, except that style which rests on the floor with the air-bag at the top, in preference to those that stand upon legs. It cannot tip over and the position is not quite so tiresome to the leg. The bellows is made in three sizes, small, medium and large. The medium is about the best for general work. I received a circular not long ago of a new invention in the bellows line, it being upon the plan of a bicycle pump. It looked practical and simple, but from experience I cannot say anything about it.

INVESTING MATERIALS.

Next in the line of our subject comes the investing and necessary materials. The three principal ones are pumice, marble dust and asbestos; sand also is sometimes used. Of course each is mixed with plaster, from one-third to one-half, as the case may require. Pumice I care very little for, as it does not make a strong investment and shrinks too much during the heating. I prefer and use mostly the marble dust; not the fine white dust, but of a coarse nature. It makes a firm, solid investment, one that does not shrink and very seldom cracks when mixed rightly. At the present time the supply which I am using seems to almost fuse or bake while heating, often making it difficult to break away from around the soldered work when cold. Asbestos also has many good qualities, and is considered one of the standbys for fire resisting power. There is nothing better for cases which require little trimming or cutting after hardening, like gold plates or very large cases of bridge-work. The fiber of asbestos holds your investment very firmly together, and I would recommend its use in most large cases. The only particular advantage which marble dust has over it is in trimming and cutting away to expose the minute corners and points, where the solder is to run; the fiber of the asbestos, of course, will not cut, but is apt to draw out sometimes, exposing a point of porcelain or loosening some part of your work.

METHOD OF INVESTING.

When your work is set up ready for the investment, trim your model away, leaving just enough to hold your fittings and teeth waxed in place. Roughen the plaster and place it in water for a few moments, so it will get thoroughly wet, thereby preventing absorption of the water from the new mixture. Perhaps a word of explanation may be necessary to have the above fully understood; in all of my bridge-work I make and adjust my attachments to the teeth before taking the impression. With the attachments in place in the impression, the model, to be made of two-thirds plaster to one of marble dust, is poured, and that part of the model carrying the attachments is invested with the teeth. But the investment should be about equal parts of plaster and marble dust for this part of the operation. When well hardened, remove all wax by slowly pouring boiling water onto it, until every particle is washed away. Do not boil the mass in water, as is customary with vulcanite cases, as it weakens the plaster unnecessarily. After removal of the wax, which leaves exposed the metal, all surplus plaster needs cutting away so as to leave as much of the metal exposed to the flame of the blowpipe as is possible. Never attempt, or think you can solder successfully by forcing the flame down into a hole, for it is one of the most difficult things to do, and rarely brings the work out perfect; the more play and freedom your flame has, the better will be the results. Be careful to have all portions of your porcelain covered; also fill all crevices between the porcelains even with the surface of the backing. Wax will sometimes get between the porcelains while setting up, and if the crevices are allowed to remain after the wax is boiled out. borax getting in will often crack your teeth.

HEATING THE CASE.

When all these little points have been carefully attended to, put your case to heat up on any kind of a gas stove, burner or heater, being sure your flame does not strike your teeth or backing directly; it must first heat up the investment, letting that in turn heat your porcelains and metal. There is no harm whatever in heating a case rapidly if the process is uniform. A wet investment causes less liability in checking teeth than a dry one. This idea is carried to the extent of putting an invested case which has been drying over night into water, to absorb as much moisture as it will, before putting over the fire to heat. Thus, the idea which formerly prevailed, that it was necessary to dry out a case before heating it up, is a useless waste of time.

If you have time to allow your case to thoroughly heat before commencing to solder, watch the gold exposed until red hot, then apply the blowpipe with a large generous flame all over the case for a good heating up of the surface which is to be covered with solder. If convenient, allow the case to remain on the heating stove while soldering, which will save work with the blowpipe, keep the case heated and also avoid checked teeth.

METHOD OF SOLDERING.

Have your solder cut into pieces of convenient size in an old tin box lid or equally hard substance, so that the hot phers will not gather and conduct any refuse to bother you later. It is not necessary to use wet borax, but if you desire to do so, put it on before the case is heated; do not add it in that form afterward. When thoroughly heated up, commence your work at one end; lay on a piece or two of solder, sprinkle on a pinch of powdered borax; and now, remember that at this stage begins the good or poorly soldered case. Be sure that your first piece of solder flows before you put on a second; do not try to force it with a small flame, as this time a large flame will heat just as well, and not burn your gold; your metal must be hot enough to soften and flow your solder. Also, do not expect your first piece to complete the job; it will flow to the hottest point (which may not be where you expect it to lay); the second may do likewise; the third and fourth will form sufficient substance to unite all together and flow like water into every little crevice and corner. Then gradually put on piece after piece, with an occasional addition of borax. As you get sufficient solder at the starting point, gradually shift the position of your case, so as to work toward the other end; but always finish your soldering at one point before leaving it to move along. Thus keep moving gradually along the case until you finish your work at the opposite point from where you started. Never start at both ends and finish in the middle.

THE TEASER.

If you wish to avoid pit holes in your solder when completed, be sure to keep your borax floating to the top of the melted metal, as the little pits are formed by particles of borax confined under each additional piece of solder; so while working have conveniently handy and use a small pointed instrument to stir up the solder and displace such particles of borax as would otherwise remain confined within the mass. A steel instrument is not the best for this purpose. I use an instrument of my own, which has been dubbed by my laboratory fraternity "Our Teaser." The point is platinum wire about gauge 17, two inches long, soldered to German silver wire about four inches long, with a handle on the end; the platinum point does not affect the solder like the steel. But to return to the solder, when you desire additional thickness at certain points and fear displacing what you have already done, put on small pieces, draw down the flame to the blue point, with just enough force of air to have perfect Bunsen flame but no noise, then use your "teaser" to spread and draw the solder to just the desired point, and you find the other has not moved a particle. You will also find the "teaser" useful in coaxing solder to such points or surfaces to which it would not otherwise flow, because the heat would keep it near the center of the larger mass of metal.

Now, after all this explanation, please keep this fresh in your mind. If you want solder to flow, have the metal of your case *hot* enough to cause it to soften and spread from contact with the heated surface. If your solder does not flow, but balls up, don't blame it, as your case is cold. Never try to push your solder into a hole; you can coax it, but never push it. Heat and borax will do all your work for you.

BURNED BACKINGS.

A word or two about burning bands and backings; it wastes a great deal of time and patience and is not necessary. It is

generally done with the small sharp flame which you are using to do the work a large flame should do. Also, when the solder is once flowed to a band leave it there; if not satisfactory, use another piece, even if it has to be ground off later. Solder once flowed will not move as easily the second time, and if attempted is liable to take part of your band with it. If you desire to move a surplus of solder to another position, with no danger of burning bands, keep the hot point a little in advance of the metal, and you will see the metal follow right along after it.

COOLINGS.

After the soldering is completed, a uniform cooling is as essential in prevention of checked porcelains as was the heating up. The best and safest way yet known is to bury immediately in a can of marble dust or plaster, leaving it there to cool. It is claimed by some that rapid cooling can be done by wrapping the case in a piece of cloth and gently dipping in boiling water. I have done this, in experiment, successfully, but never had the courage to utilize the plan on a large case when the patient was waiting and in a hurry. The marble dust is safe and far better than cooling with exposure to the air.

When cool carefully break away the surrounding investment and look for checks. If you see any checks or any facings drop off, you will be sorry you ever opened it, and will say, "Northrop was just talking when he said he never checked teeth." But, if everything has come out satisfactorily, you will smile and think dentistry is rather enjoyable after all.

The case is then placed in a jar of muriatic acid, remaining there until brightened and ready for finishing and polishing, about which I could fill as many more pages, but will refrain from burdening you further this time.

A METHOD OF MAKING OPEN-FACE CROWNS.* BY P. B. BAIN.

Take a plaster impression of the tooth to be crowned in a partial impression-tray. Fill in the impression of other teeth

^{*}From Dental Brief.

if there be any, allowing the tooth to be crowned to stand alone. Trim off all superfluous plaster from the tray and allow the impression to dry. When the impression is dry, place over the impression and tray a small rubber ring commonly used for dies in bridge-work, and pour into the impression Mellott's metal; after cooling, separate the fusible metal cast from the plaster impression. This gives a metallic model of the tooth to be crowned. With a wheel bur carefully form a groove around the metal tooth at the gum margin about as deep as the crown is intended to extend under the gum margin. Now burnish tinfoil around the tooth to secure a pattern by which to cut the gold; in doing so arrange to have the joint come where it is least objectionable. In cutting the gold it is best to allow a little margin, as in fitting it to the tooth it may slip slightly to one side or the other. After annealing the gold, with a pair of pliers bend it around the tooth, and grasping both ends with the pliers hold it firmly, while with a burnisher or by swaging it is made to conform to the shape and contour of the tooth. For swaging, small counter-dies covering the palatal or lingual surface and the occlusal edge may be made of fusible metal, or one of the harder varieties of modelling compound. Now carry it to the mouth and adjust it to the tooth, remove and solder the joint. I have swaged gold in this way as thick as 27 gauge readily; but as a rule thinner gold is preferable.

The advantage of this method is its simplicity and the accuracy of adaptation. A crown can be made in about half an hour's time.

THE SAFE ADMINISTRATION OF ANÆSTHETICS.* BY E. G. SMITH, D.D.S.

First, I would draw attention to the proper position of a patient while being anaesthetized.

I am satisfied, by long experience with chloroform, ether, and nitrous oxid gas, that freedom from danger in administer-

^{*}From Dental Brief.

ing any of the above anaesthetics depends, to a greater degree than surgeons would readily admit, on the proper preparation of the nasal cavity and the position of the head. Attention to these points does away in a majority of cases with suffocating effects and the struggling of the patient during the administration of any of these anaesthetics.

In preparing a patient for anaesthesia first examine the nasal cavity, and, if there is any doubt of the air-passage being perfeetly free from mucous or catarrhal condition sufficient to impede free access of air, take an all-rubber ear-syringe or other similar appliance, fill the bulb with peroxid of hydrogen of suitable strength, and, holding the patient's head back, inject into the nasal passages until they are thoroughly cleansed and fully free. Follow this by glycothymolin, slightly diluted, to reduce any irritation caused by the peroxid of hydrogen. This done, place the patient in a horizontal position, raise the head by placing under it a cushion sufficiently high to hold the chin west down on the chest,—as low as the patient can have it and feel and breathe comfortably through the nose, and, when told to breathe through the mouth, does so with an effort. Then, remembering that an anaesthetic given in this way is more rapid in its action and should not be pushed, especially in the first stages, which should always be guarded against, and following these rules, much of the disagreeableness and danger of anaesthetics will be done away with. Try it.

THE FINDING OF DECAY.*

BY GARRETT NEWKIRK, LOS ANGELES, CAL.

The first step in a real examination of the teeth is to get them clean—not only should all calcareous deposits be removed, but the teeth should be polished from every stain and discoloration if possible. In no other way can every surface be brought to view, and imperfections certainly noted. The use of the scaler will reveal very frequently points of sensi-

^{*}Extract from article in Dental Gazette.

tiveness or the hidden margin of a cavity. One should hesitate to pass an opinion as to the number or extent of cavities, probable cost of operations, etc., until he has been permitted to put the mouth in proper condition for an examination. It is a rule without exception that a thorough cleaning of the teeth should precede a series of operations. Cleanliness of surfaces having been assured, the next precaution is that of anti-moisture. No accurate examination can be made of a wet surface. Decay spots and ragged lines are seen imperfectly and often not at all through films of saliva.

For inspection of the upper teeth the patient should be high, with the head thrown well back. A cotton roll, or, as I prefer, a long thick piece of spunk, should be laid between the alveolar process and the cheek or lip, with directions to keep the mouth steadily open. Having first wiped the teeth with cotton or spunk, the warm air syringe may be used, then a piece of spunk wet with alcohol is rubbed vigorously over the free surfaces of the teeth, followed again by warm air. It is a good plan sometimes to rub with pumice powder before using the warm air and alcohol. And now the surfaces present a different appearance. Every pit and fissure is revealed on the occlusal, lingual and buccal surfaces, also shadows which may be indications of proximal decays. Where to use the exploring point is clearly shown, and we learn definitely whether or not fillings are needed. The examinations of these surfaces may be made, conveniently in three sections one on each side for bicuspids and molars, another for the incisors and cuspids. Freedom from moisture for a corresponding examination of the lower teeth is not as easily secured, but may be as a rule by the following described method. The saliva ejector, valuable in all cases, is here quite indispensable. One needs an assistant, which may possibly be the patient himself.

A long roll of cotton, bleached muslin or spunk, must be held down on each side of the alveolar ridge. For the left side, assuming the operator to be right-handed, he will hold with the forefinger of the left hand the roll between the tongue

and the ridge, the assistant holding the one next the cheek and lip firmly in place. By this means the overflow of moisture may, as a rule, be prevented long enough for similar procedures and examination to that already described. On the right, however, the assistant will hold the roll against the lingual side of the alveolar ridge, the operator that next the cheek. For the front teeth, as examinations are principally on the labial surface near the gum, the assistant holds a large roll lingually, while the operator holds the other and at the same time depresses the lip.

By these methods, without the use of the rubber dam, all classes of decay may be discovered except one—and that one is the most insidious and dangerous of all—the kind which has its beginning at or near the point of contact of the teeth—those we usually name approximal cavities. The first essential for an examination of proximal surfaces is, of course, dryness, the second is separation.

The thread will often show us plainly where decay is, but it cannot be relied on for determining where decay is not. Ordinarily the teeth may be kept dry long enough for examination by the use of cotton rolls or spunk, but on the whole it pays to employ the rubber dam.

And now for the necessary space. Sufficient may be obtained, nearly always, without distress to the patient, and in a few minutes' time, by the use of separators. It is not a matter of importance, perhaps, what kind of a separator we use—any one to which the operator is accustomed and that will do the work.

We have no right to take the chances of overlooking decay. We should know positively, either that it does exist or that it does not. We have no right to dismiss an examination with the remark or thought, "I guess that's all right," or "If there is anything, it is small and can go awhile." We have no right to guess or jump at conclusions. It is our business to know. Thoughts that are fathered by wishes have no value whatever.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

PEROXID OF SODIUM.

This rather common bleaching agent, according to Walter Smith, sets glycerin on fire, and if added to a solution of formal-dehyd produces a violent explosion.—Digest.

VULCANIZING ON PLASTER MODELS.

A model, upon which rubber is to be vulcanized, should be as deep as it is wide, or the expansion of the plaster will be unequal, the model will alter in shape, and a badly-fitting case will be the result.—Quarterly Circular.

CEMENT FOR MOUNTING CROWNS AND BRIDGES.

H. J. GOSLEE.

I give preference to cement for mounting crowns and bridges, but I always observe the precaution of coating the inside of crowns and the post with a thin film of chloro-percha, or gum shellac, before the cement, to facilitate removal in case of necessity.—*Review*.

TO REFIT DENTURES.

R. C. BROPHY.

Place new process oxyphosphate of copper, mixed to a stiff creamy state, upon the defective surface and press accurately to place. Allow the cement to set in contact with the tissues. Applicable to cases in which the tissues have become flabby and yielding as well as to those in which a leak at the periphery admits air under the plate.—The Bur.

SEPARATING THE TEETH.

C. O. HOOD.

When a great deal of separation is needed, partially excavate the cavity and pack very firmly with cotton saturated with chloro-percha. It may remain two or three weeks if needed. The teeth will be well separated, the cavity easy of access, and perfectly protected for the time being by the chloro-percha, while the cotton cannot become foul.—Dominion Journal.

DUPLICATING PLASTER MODELS.

E. MULLER.

Müller, in Schweizer Viertel jahrsschrift, gives the following method of duplicating plaster models: Allow about 150 sheets of ordinary gelatin to stand for one or two hours in cold water. It is then cooked and into it from 120 to 150 grams of oil are incorporated. The model is then placed in an enameled vessel, and the mixture is poured over it. After three hours the impression will have hardened, enabling one to make a fac simile of the plaster model.—Cosmos.

TEMPORARY CROWN.

F. E. ROACH.

I never allow a patient to leave my office without a temporary crown in the place of the one that has been cut off. For emergency crowns I keep a stock of some fifty or sixty of the cheaper, ready-made porcelain crowns. From this number I can select one to serve very well as a temporary substitute intil the permanent crown is made. They can be quickly set with gutta-percha and are easily removed when desired. And I find most patients appreciate the service.—Dental Review.

THE IDEAL DIE.

G. A. COMPTE.

Take a plaster impression; if it breaks, unite the pieces with some easy-flowing cement. Boil the impression in beeswax ten or fifteen minutes to fill the pores of the plaster. Build a sheet of wax up around the tray to the height of the desired die, coat thoroughly with dry graphite, and electroplate with copper to the thickness of a writing card. Set the impression on a dish of sand and pour molten zinc into the matrix thus formed. This

will give a die that cannot be duplicated for accuracy, quickness, cleanliness, and durability.—Dominion Journal.

SOLDERING PLATE-WORK. EDWIN CHEW.

In soldering plate work, I think it is better to put on all the solder you think necessary at once, have the case well heated ail over, so that the solder will flow equally pretty nearly all at the same time.

Another thing, to prevent the plate from springing the joints must fit and the back come down tightly; if you can't get it tight, take pieces and put underneath and in between with a band of iron around the outside, with little staples across that band, and I'll warrant you it will succeed.—*Items of Interest*.

THE CLOSING OF FLASKS.

Never use a large press or a swaging press for closing a flask after packing, for this reason: The plaster of paris when dry absorbs a great deal of moisture when the flask is placed in boiling water for the purpose of softening the rubber, and the rubber not only offers considerable resistance to the saturated plaster, but also condenses it, hence if too much pressure is used the fit is lost; the teeth are likewise easily raised by the thicker rubber at the sides than in other parts before the flask is properly closed, and consequently the bite is thrown out. Always use a small press and do not hurry the closing of the flask.—Quarterly Circular.

HOW TO PREVENT CHECKING OF THE TEETH IN REPAIRING BRIDGE-WORK.

H. W. NORTHROP.

In reference to soldering or repairs in bridge-work, there is one thing I will mention, which may prevent the checking of the teeth. You will have more trouble in putting a repair case through and not checking than with new teeth. This arises from the method of heating. There is temptation when you put one tooth on a plate or bridge to confine your heat to that

one tooth for fear of damaging something else; but that is an error. The more the plate is heated the less trouble you will have and the better your case will come out.—Items of Interest.

ARTICULATION AND OCCLUSION.

H. J. GOSLEE.

The degree of usefulness and longevity of the artificial substitute depends greatly upon such formation of the articulating surfaces, and in the posterior region the arrangement of cusps and sulci in their relation to the antagonizing teeth, as will restore their normal functions. The arrangement should provide for correct position not only when the teeth are in direct occlusion, but also in their articulation or the act of bringing them into occlusion.

The evils of faulty and imperfect occlusion are often apparent, and result frequently in marked manifestations of virulent peridental and neurotic troubles.—*Items of Interest*.

MAKING OF TEMPORARY CROWNS.

H. J. GOSLEE.

The operator who dismisses a patient now without resorting to some temporary method of replacing the lost crown does an injustice to both the patient and himself.

My method of making a temporary crown is a quick one, and I always have a selection of facings on hand, which all of us should invariably have. I first take a piece of German silver wire, fit it to the canal, select and grind the facing, and then attach it to the wire by clinching the pins; then remove it and place upon a charcoal or asbestos block, touch the parts with soft solder flux, chip or cut off a small piece of fusible alloy, place it in position, and turn the flame of the Bunsen burner upon it. The soldering is done in a few seconds then without danger, and the construction is complete. It is then mounted with gutta-percha or temporary stopping, and may be worn for some time. Such a crown can easily be constructed and applied in ten minutes.—Dental Review.

OPEN-FACE CROWN.

A. J. M'DONAGH.

A tube of gold is prepared, fitted and adapted in the mouth. While on the tooth it (the tube) is filled with plaster for an impression. For the next I have an appliance consisting of a cup of hard vulcanite with a soft rubber base, in which is a hole. The tube is now placed through this hole, allowing just that amount within the cup which extended above the margin of the gum about the tooth. Mellotte's metal is poured into the cup, tilling the impression and imbedding the edge of the tube within the cup. The cast with the tube is removed and all plaster washed out. Look into the tube from the side farthest from the cutting edge of the cast representing the tooth. Squeeze the tube together till the slit is in line with the cutting edge; place the tube and cast in a vice, ends against the jaws, and tighten the vice sufficiently to hold; with parallel pliers pinch the tube against the cast until it fits perfectly as a fac simile, which can be done in three minutes. Remove, melt out the Mellotte's metal, and with a small amount of solder unite the crevice where the cutting edge had been. With a fine saw cut out the face from the crown, which is an exact fac simile of the tooth. Trim off gold, polish, and the crown is finished. All can be done in half an hour.—Dominion Dental Journal.

A VALUABLE NEW DEVICE TO RELIEVE AN ABSCESS.

H. F. HAMILTON.

I submit to the Academy a device which has been of considerable use to me for some three years, and one that wins the immediate gratitude of the patient. It started by my slipping the end of the rubber tube of my saliva ejector over the cavity of a tooth, which had begun to ulcerate, and where I had opened into the pulp-chamber. The tooth was aching fiercely. Probably in a few hours it would have been all right, but I put on my rubber tube, started the ejector, and in two minutes the pain was gone. Since then I have used it frequently to relieve pressure, and also to get pus from a blind abscess. I use a heavy tube, as the ordin-

ary one flattens by the suction. An ordinary rubber tube, hard by age, will do if not too rotten.

The tips which I have made to facilitate the suction are metal tubes sliding into the end of the rubber tube, and having a concave disk soldered a quarter of an inch from the end. This disk is filled with soft gutta-percha filling, heated and forced into the cavity, making a tight joint.

I show this attached to a bicycle pump, which can be used for an exhaust pump by reversing the valve. This can be used where the saliva ejector has not power enough. I have also used this exhaust in cases where I wished to draw a small quantity of blood and a leech was not at hand. A cut with the trephine lance, the rubber tube applied to the gum, and a quantity of blood is taken. The end of the tube should be small for this, as a large one is painful.—From International Journal.

PYORRHEA ALVEOLARIS.—CONCLUSIONS.

A. W. HARLAN.

From what you have read in times past and from recent papers published in dental journals we have great hopes of being able to prevent pyorrhoea. The strongest note to sound is prophylaxis. In summing up the results of my observations and what I gather from practice we must conclude that the basis of treatment lies largely in the domain of exact surgery. The fixing of teeth in a position where little or no movement is possible is an absolute necessity. By discarding the use of remedies in pockets where they are not needed is a decided advance. Less frequent medication of pockets is required than was formerly thought advisable. The pockets must be burned out until a new surface is obtained. Washes for the mouth must be of the simplest combination of drugs to be effective, and frequent massage of the gums is always advisable and essential for hardening and condensing them. Local treatment is of more value where any constitutional disorder is brought under control by properly directed hygiene and medicinal treatment on the part of the medical practitioner.

We must recognize that the internal use of drugs alone will not correct the disorders of the gums when the roots of the teeth are covered with foreign deposits and the alveoli are wasted. I plead for absolute thoroughness in the most minute details of pyorrhoea treatment. Without this care and fidelity, success will not crown your efforts, even though the teeth are held firmly in position and drugs are used which otherwise would be of value were these foreign bodies detached and removed.—

Dental Review.

DEVICE FOR HOLDING MORE SECURELY SINGLE TEETH IN VULCANITE PLATES.

N. H. KEYSER.

Where the security of single teeth depends entirely upon the vulcanite, unless it is vulcanized very hard, under stress the pins are apt to work loose; in some cases, indeed, to pull entirely out. He takes German silver or platinum wire about 26 gauge, and forms with it two smaller vertical loops that fit over the heads of the pins, the two free ends of the wire are inside, or next the tooth; and between these he forms a larger horizontal loop.

The two small loops are placed over the heads of the pins and pressed well against the tooth; the larger loop is then seized with a pair of pliers and twisted so as to draw the smaller loops tightly around the pins; the free ends are then bent outward into a horizontal position. With straight pin-teeth all the loops will be vertical, the larger one standing out at a right angle to the other two.

This device takes the place of a soldered tongue, not only acting as a hard metallic washer to the pin-heads, preventing wear of the softer vulcanite, but also, by extending into the vulcanite, making for the tooth a much more secure anchorage. At the present cost of platinum it takes about twenty-five cents' worth of wire for each tooth. German silver is quite inexpensive, and probably will do as well in many cases.

It is useful, also, where plain vulcanite teeth are used resting upon the gums, especially so in cases where, owing to loss of the posterior teeth, the front teeth are unduly taxed. In these cases, by twisting the adjoining free ends of the wire together, not only does it add security to the teeth, but it also adds strength to the plate. The loops may be so disposed as to se-

curely hold in place a strengthening bar during the process of packing and vulcanizing.—Dental Brief.

THE CAUSE OF PORCELAIN CRACKING.

S. H. GUILFORD.

I have looked into the matter myself very carefully for a good many years, and have come to the conclusion that, in the great majority of cases, porcelains are cracked by the too liberal application of borax. Porcelain on crowns or bridge-work usually breaks in one or two directions. It will crack entirely through the tooth, either horizontally or vertically, in the direction of the pins, or else it will crack parallel to the backing.

The causes of these two kinds of breaks are different. When the tooth breaks in the line of the pins I think it is due to the unequal rates of expansion of the platinum and poreclain. It was shown how the coefficient of expansion of the platinum and porcelain are about the same. If we heat them up the same, I do not see how it is possible to break the tooth, but if the platinum pins are heated and the porcelain cools before, then we have a case of fracture. Where we have a fracture parallel to the backing, I think it is caused by the borax getting through the pin-holes beneath the backing. Many have a larger hole than the pin requires, or the holes are enlarged to rectify an error in punching. That affords a good opportunity for the borax to get in. If the hole is nearly the same as the pin, the borax is not so apt to get beneath the backing. When the porcelain has broken off and the remnant is removed, one can see on the under side of the backing a distinct layer of solder, with its bubbled surface proving that the borax had gotten in and the solder followed. When the borax and solder get in you have something that comes in contact with the tooth that is much harder. The result is that that portion of the facing next to it is expanded and broken away. The other part remains, because the pin holds it. I now overcome that by this plan. After the backing is made and fitted to the tooth, I remove it and then adapt a piece of No. 20 or 30 foil gold, thin, over the back of the facing by means of a cork. The backing

is then put on and pressed down, and the excess of foil trimmed off. By this means the borax is prevented from getting in between this layer of gold foil and the tooth itself. In regard to the backing, I have found that there is nothing softer or more adaptable than what we are pleased nowadays to call platinum-gold or crown-metal. This material is made of gold and platinum rolled together. I put the gold side against the porcelain when I desire the light effect of the gold.—International.

HOW TO MAKE A SEAMLESS GOLD CROWN.

J. P. NICHOL.

The full gold crown is causing considerable comment at the present time, and several "swaging appliances for seamless crowns" have been placed on the market recently. I will state that this type of crown may be produced absolutely seamless in about half the time it takes to go through the swaging method; there is no danger of splitting the metal in stretching, and a perfect occlusion may also be obtained.

The method, in short, is as follows: Measure the tooth, cut and sweat a band (by sweating I mean the union of the cut ends by the autogenous method of direct fusion). The contouring may be nicely done with heavy short-beaked pliers, stretching or bulging the band out to within one-sixteenth of an inch of the cervix, at which point it passes beneath the free margin of the gum.

After shaping the occlusal margin of the band and making proper indentations for the fissures, a cusp is selected or an impression of the occluding tooth used, and by means of a special stamping device a matrix of pure gold about 2/1000-inch gauge is struck up, and filled with the same karat gold that the band is made from; the cusp is filled true, making contact with the band at every point, and held in position with binding wire; the joint is fluxed, and with the piece lyong on charcoal the band and cusp are united without solder by means of the blow-pipe. The result is a seamless crown, in which all danger of discoloration is avoided by the absence of the solder; on the

other hand, the sweat-joint in the band is more pliable and is equally as strong as any part of the band.

Even though we grant that the result may be practically the same with either method, the swaging process is defective inasmuch as it fails to develop and maintain that high degree of manipulative skill which it should be the ambition of every operator to attain and conserve; it is the difference between the product of the skilled and artistic workman and the automatic machine.

The porcelain art in dentistry, or the method of baking artificial crowns, etc., is one that is also exciting a great deal of interest among our profession. For single crowns on the ten anterior teeth it would seem that here would be its widest range of usefulness, as it is a question whether it will ever replace the all-gold crown or modifications of the same for strength and durability on the molar teeth, certainly not in the very short bite cases, as it is in proportion to the amount of poreclain used in this work that we get the best results in resisting the force of mastication.—International.

INVESTING MATERIALS.

H. J. GOSLEE.

Many substances may be used in combination with plaster of paris, which is necessarily the basis because of imparting the property of crystallization, and which must be incorporated to the extent of at least 50 per cent.

The remaining proportion may be then composed of such materials as will, by virtue of their characteristics and physical properties, meet such requirements. The following are serviceable:

Powdered Silex, Fine Asbestos, Beach Sand, Marble Dust. Pulverized Pipe Clay, Powdered Fire Brick, Magnesium Sulphate, Pumice Stone.

A combination of any of these ingredients in varying proportions with the proper quantity of plaster will usually possess the necessary qualities, excepting pumice stone, which, because of its low fusibility and inherent tendency to expand, should

never be used, and asbestos in large proportions, which, while serving to hold the mass together, when mixed, is objectionable because of its extreme low conductivity.

The property of free conductivity is important because such materially lessens the time consumed in heating the case, by absorbing and distributing the heat more rapidly and evenly, and by thus retaining it the better the soldering is facilitated, and the liability of checking porcelain facings diminished.

A tendency on the part of any compound to expand and crack open when subjected to the influence of heat usually indicates that the texture is too fine to admit of the rapid evaporation of the moisture, and as possible displacement of the parts and checking of facings is thereby promoted, the use of such material is objectionable and unsafe.

By the addition of a coarser ingredient to the compound, however, this fault may be overcome, and a small quantity of fine shredded asbestos will also frequently eliminate the objection in a measure, without greatly reducing the property of conducting heat.

The investment compound should be mixed of a moderately thin and plastic consistency, so that when the proper quantity is poured upon a piece of paper it will offer no resistance in pressing the case down into place, until it is properly submerged and sufficiently covered. If too stiff there would be danger of a change in the relation of the parts.

To make sure of a close adaptation of the material to the facings and other parts, and to hold them securely when invested, all surplus wax and dirt should be carefully removed and the case dipped in water just previous to bringing it in contact with the investment material.

The interior of all crowns and caps unless previously well filled with plaster should then be first thoroughly packed with the investment material by using a small piece of wood or fine-pointed spatula; because if not perfectly filled the presence of air spaces, into which the heat becomes concentrated during the process of soldering, will materially increase the liability of burning or fusing the parts, an accident which for this reason not infrequently occurs.—Items of Interest.

OBITUARY.

DR. CHARLES E. ESTERLY.

Our readers will be pained to learn of the death of Dr. C. E. Esterly, of Lawrence, Kansas, who died September 10th, 1901, the cause of death being blood clot at the base of the brain.

Dr. Esterly was born in Columbiana, Ohio, July 5th, 1863; graduated in the public schools in May, 1881, and entered Ohio State University in September of the same year, where he remained one year. His appreciation of his opportunities at that institution was very keen and one of the pleasant experiences of his life, to which he often referred. At even that age he felt that the student received only so much as he gave of himself.

In the autumn of 1882 he entered the dental office of Dr. J. C. Whinnery, of Salem, Ohio, where he received the foundation of the ethical ideas that always characterized him in his profession. In October, 1883, he matriculated at the Ohio College of Dental Surgery.

In the spring of 1884, when Dr. Patterson was about to leave Lawrence, Kansas, for Kansas City, Mo., Dr. Esterly was his successor. On March 28, 1884, he arrived in Lawrence. In the fall of 1885 he returned to Cincinnati and completed his course, and graduated on March 4, 1886, returning to Lawrence shortly after. On October 25, 1887, he was married to Lena L. Hayden at Columbiana, Ohio, who survives him.

Dr. Esterly was a prominent member of the Kansas State Dental Association, of which he was President in 1894; of the Missouri State Dental Association, and of the dental fraternity Delta Sigma Delta. At the time of his death he was deputy master of Nu Chapter of Delta Sigma Delta in the Kansas City Dental College, and was the organizer of the same. He has been a teacher in the Kansas City Dental College since the year 1892. Dr. Esterly was a member of many organizations other than dental. He was an exalted ruler of the Elks, a thirty-second-degree Mason, a Mystic Shriner, a Knight of

Pythias, and a member of the college fraternity Phi Kappa Pi. He was thirty-eight years of age.

At the funeral the attendance was very large, and prominent dentists from Kansas and Missouri came in large numbers with their sympathy to Dr. Esterly's family, and to testify to their appreciation of the deceased.

SOCIETY.

OHIO STATE DENTAL SOCIETY.

The 36th annual meeting will be held in Columbus, at Great Southern Hotel, Dec. 3-4-5, 191. This meeting promises to be an excellent one and it is hoped as many of the profession as possible will attend. A partial program is here given:

PROGRAM.

- 1. President's Address—H. F. Harvey, Cleveland.
- 2. Diagnosis in Dental Practice—Jonathan Taft, Ann Arbor, Mich.
- 3. Technic and Taste—Hugh B. Mitchell, Canton.
- 4. a. Nitrous Oxide and Oxygen in Dental Surgery; b. Demonstration—D. H. Ziegler, Cleveland.
- 5. Cohesion of Gold—C. A. Hawley, Columbus.
- 6. Will a High Preliminary Educational Requirement Remove the Existing Evil—G. S. Junkermann.

 Others to be announced.

CLINICS.

- I. C. A. Hawley, Columbus—Strengthening Porcelain Crowns.
- 2. W. I. Jones, Nelsonville—The Use of Nitrous Oxide in the Treatment of Teeth.
- 3. W. A. Price, Cleveland—Selected.
- 4. L. E. Custer, Dayton—Details in the Construction of Gold and Porcelain Crowns.

- 5. H. E. Jenkins, Ironton—Porcelain Crown and Bridge-Work.
- 6. E. M. Cook, Toledo—Tipping Tooth with Solid Gold Cusp.
- 7. E. C. Beggs, Mt. Vernon—A Method of Making Clasp Plates, or so-called Removable Bridges.
- 8. A. F. Miller, Sandusky—1. Filling the Cervical Portion of the Cavity with Soft Gold and Finishing with Cohesive Gold; 2. Preparation of Cavities for Amalgam Filling.
- 9. E. B. Lodge, Cleveland—A Method of Modelling and Swaging Cusps.
- 10. A. S. Condit, Mt. Vernon-Logan Crowns.
- Vithout the Use of Undercuts.
- 12. J. W. Harris, Lodi—An Emergency Crown.
- 13. C. H. Burkett, East Liverpool—An Exhibit of New Things.
- 14. S. M. Weaver, Cleveland—Cap and Logan Crown.
- 15. V. E. Barnes, Cleveland—The Management of Regulating Appliances for the General Practitioner.
- 16. W. T. Born, Kenton—Gold Filling.
- 17. W. T. McLean, Cincinnati—Pulp Capping.
- 18. D. W. Clancey, Cincinnati—Porcelain Inlays.
- 19. David Stern, Cincinnati—Adapting of Platinum Bands and Posts to Porcelain Crowns Without Solder.
- 20. W. O. Hulick, Cincinnati—Porcelain Work.
- 21. Microscopic Exhibit—J. R. Callahan, Wm. H. Van Deman, J. F. Stephan, and L. P. Bethel.

INSTITUTE OF DENTAL PEDAGOGICS.

The ninth annual meeting of the *Institute of Dental Peda-gogics* will convene on Tuesday, the 31st of December, 1901, and continue for three days at the Seventh Ave. Hotel., Pittsburg, Pa.

The usual New Year Day rates can be obtained.

This is the only *Normal School* existing in the Dental Profession.

Come everybody and see it perform.

A partial program is submitted:-

President's Address—By G. E. Hunt, Indianapolis.

Conduct of the Operatory Clinic—By G. V. Black, Chicago. (A method of keeping records, grades, etc.) Discussion by Whitslar, Grant, Guilford.

Executive Work of the Faculty—Drs. Kirk, Patterson, Stubblefield and Hart.

(Symposium.)

Metallurgy—How to Teach—By Dr. Hodgen, San Francisco. Discussion by Essig and Beal.

Class Room Methods of Teaching—By Drs. Hoff, Nones, Tenney, Foster.

(Symposium.)

Teaching Prosthetic Dentistry—By G. H. Wilson, Cleveland.

Basteriology—How to Teach—By W. R. Blue, Louisville. Discussion by Bethel, Cook and Walker.

Reports of Committees—On Operative and Prosthetic Technics—By Drs. Week and Hoff.

D. M. CATTELL, Chairman Ex. Board.

OHIO STATE BOARD OF DENTAL EXAMINERS.

The next meeting of this Board will be held in the Great Southern Hotel, Columbus, O., beginning Tuesday, Nov. 26th, at 2 p. m. All candidates must bring excavators, burs, and filling materials.

For examination blanks address

Dr. L. P. Bethel, Sec'y, Kent, Ohio.

VERMONT BOARD OF DENTAL EXAMINERS.

A meeting of the Vermont Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, Wednesday, Dec. 11th, 1901, at 2 o'clock p. m., for the examination of candidates to practice dentistry.

The examinations will be in writing.

Candidates must come prepared with instruments, rubber dam and gold.

Applications, together with the fee (ten dollars), must be filed with the secretary on or before Dec. 1st.

George F. Cheney, Sec'y, St. Johnsbury, Vt.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

Married.—On Tuesday, Oct. 8, at the Broad Street Presbyterian Church, Columbus, O., Dr. H. M. Semans and Miss Bessie Merrick were united in marriage. The Ohio Journal extends congratulations and best wishes.

Dental Office Thieving.—Reports from various portions of Ohio show that many burglaries have been committed in dental offices of late. A number of offices in Toledo were recently burglarized, and on the night of Oct. 13th, Dr. C. D. Peck, Sandusky, sustained a loss of more than \$100. Gold, plate, foil and scraps, porcelain teeth, and crowns and dental rubber seem to be the materials sought.

Remember.—The date of the Ohio State Dental Society is Dec. 3, 4, 5, 1901.

The place of meeting is Great Southern Hotel, Columbus, Ohio.

The session opens promptly at 10 a. m., Tuesday, Dec. 3d.

These dates should be at once crossed off on your appointment book.

The benefits you will derive from attending will more than equal the expense incurred. Try it.

OHIO DENTAL JOURNAL.

VOL. XXI.

DECEMBER, 1901.

No. 12.

CONTRIBUTIONS.

TO MAKE A RICHMOND CROWN WITH SOLDERED GOLD FILLING.

BY DR. H. A. MOYER, KENDALLVILLE, IND.

Grind and trim tooth to proper taper, take measure and fit band; having band long enough after fitted so that the projecting end will overlap the root. Cut off tooth below the gum line and ream out pulp chamber. Place band upon root and with small snip shears cut band to grinding surface of root, then bend projecting ends over root to cover same. Tap down to close fit with small steel punch made from our excavator handle. With sharp pointed instrument punch hole to correspond with canal in root. Insert pin and cut off to proper length. Dry and with wax cement fasten all together firmly so no change of position can be made. (You can, if desired, now remove and with small piece of solder fasten securely all together, pin, band and cap, but usually this is superfluous.)

Select facing, grind and fit to alignment and occlusion, with cap in position and without the taking of impression. Fit thin piece of gold over labio-cervical portion, covering facing slightly and as much of band as desired. Then cement all in position with wax cement, or Parr's wax flux, and remove carefully without change of position in cap or facing. Make good-sized investment of one-third river sand and two-thirds plaster,

place all in investment, facing down. After thoroughly hardened trim and remove facing.

Now if a filling is desired, take piece of 24 k. gold, 33 gauge, bend and burnish over facing to correspond with filling desired, then place in investment and gently tap to place, using the facing as a die and the investment as counter-die.

Remove facing and leave gold in investment. Now grind off facing as desired to show gold filling and trim gold so you have one-half line lap upon facing. Back facing with 24 k. gold or gold and platinum, covering same all over back and part cut away with no lap. Burnish to close fit and trim edge to correspond with gold form in investment.

Now place all back in position and trim investment to smallest possible size, allowing only enough to hold parts together. This will form a small gold-lined box for filling and is easily filled with scrap gold and solder, which should be cut in very small pieces and placed in the following solder fluid:

Boracic acid, one-half ounce.

Borax, one-half ounce.

Mur. ammonia, twelve grains.

Carb. pot., five grains.

Aqua, q. s. to make four ounces.

With small brush moistened in fluid, go over every part you desire to cover with solder; then take solder first and work into the cervical portion, following with scrap, layer upon layer, until all parts are full and heaped up. Heat gradually until the highest possible point can be reached with Bunsen burner, then place upon soldering block, having a V-shaped space for same to lay, and where you can get blow-pipe flame underneath, as all should be fused from between. Cone, and finish in usual manner.

A very suitable soldering block can be made with large piece of pumice stone. The V-shaped space can be formed nicely, and it holds the heat well.

THE MATRIX AND PAD.

BY F., W. STEPHAN, D. D. S., CHICAGO, ILL.

The most prominent cause of many operators having abandoned the use of the matrix is the difficulty of working a filling

material, like gold, into the acute angles formed by it and the walls of the cavity. This difficulty is sometimes obviated by having the matrix held loosely in place by some material that will give, such as gutta-percha or rubber, thus allowing it to be pressed from the cavity sufficiently during the operation to allow of free access to all margins. In the hands of many operators this has proven a great success. There is, however, considerable advantage to be gained by having the matrix held firmly in place. This can be accomplished, together with the other advantages, by the following method:

A pad of the filling material (gold, tin and gold, or tin foils, folded to suitable thickness) is cut somewhat larger than the cavity surface of the matrix. This is laid against the face of the matrix and a slight surplus is folded over the cervical edge. This allows the matrix and pad, together, to be carried between the teeth. They are then wedged firmly to place. The pad is cut with a sharp excavator along the buccal and lingual margins and that portion inside the cavity is condensed against the cervical wall.

In this connection the pad does three things. First, it holds the matrix away from the margins of the cavity, allowing of free access after firm wedging; second, it protects the margins from the danger of fracture in wedging; and third, it covers the cervical margin with ease and certainty.

PRACTICAL HINTS.

BY S. D. RUGGLES, D. D. S., PORTSMOUTH, O.

CORK CARPET.

From a hygienic and practical standpoint it has no equal for an operating room. It is soft under foot, rendering all movements noiseless, non-absorbent, and is readily cleaned by wiping with a damp cloth.

May be had in any shade which extends through its entire

thickness of a half-inch.

TRUE ECONOMY.

The old rubber dam and sweepings from your operating room will keep you well supplied in Dunlap hats. Try it.

HOW TO OBTAIN A CORRECT BITE.

After placing the trial plate, or plates, in position, instruct the patient to put the tip of the tongue as far back on the hard palate as possible and hold it there. This draws the patient's attention from the real object in view and at the same time depresses the hyoid bone, thereby causing a tension of the digastric muscle, which prevents any forward movement of the maxillary. When the mouth is closed the position will be normal.

TO AVOID BLACK JOINTS.

Just before packing work into the joints a small amount of thin cement with a broach or explorer, and pack immediately. After screwing the bolts to place give each a quarter turn backward, which lessens the risk of breaking blocks and reduces the pressure from expansion in vulcanizing.

OCCLUSION OF TEETH.

BY L. P. HASKELL, CHICAGO.

In the insertion of artificial teeth, either crown, bridge or plate, there is nothing of more importance than the occlusion. There are more failures from faulty occlusion than from any other cause.

In the final adjustment in the mouth the patient should not leave the chair until the dentist is sure the occlusion is correct.

In the crown or bridge there should be no lateral pressure in any direction. The teeth which occlude should meet directly end to end, otherwise the roots or teeth used as piers are soon loosened. If there are natural teeth, bicuspids and molars which occlude, let the pressure be entirely on them.

In the case of plates, faulty occlusion results in displacement.

The six anterior teeth should never come in contact, as the result is forcing the plate forward and dropping at the rear. The pressure should be on the bicuspids and first molars. In adjusting in the mouth, when finished, use the thick articulating paper, the patient closing rapidly upon the paper one side at a time.

If there is a second or third molar on the lower jaw that leans forward, do not let the upper tooth meet it, as it will sooner or later crowd the plate forward. If there is room for the second molar back of the lower one, the pressure will be in the right direction.

EFFECTUAL METHOD OF SEALING ARSENIC IN A TOOTH.

BY DR. A. L. BLACKBURN, CURWENSVILLE PA.

In applying arsenic in any form to devitalize a nerve, there is always some liability of its escaping by capillary attraction. This may be prevented by cutting a small disc of medium stiff paper, coating one side lightly with sandarac varnish and applying coated side directly on the drug. By carefully smoothing the edges it effectually seals in the arsenic and at the same time prevents, to a great degree, the possibility of pressure on the nerve while introducing the gutta-percha.

PARTIAL DENTURES AND THEIR RETENTION.

BY HARVEY M. KIRK, D. D. S., COLUMBUS, OHIO.

It is our honest conviction that while the partial denture hasbeen of late years relegated to the rear, it is not to be consigned to oblivion; for partial dentures are not all bad, nor always bad; resplendent, shining bridges are not all good, nor always good, as will be seen as time rolls on, and the places that knew them once will know them no more; and when the possessors of the aforesaid bridges shall be wiser but poorer people.

We do not intend to reflect unjustly on dental bridges and their builders. Far from it! On the other hand, we regard them, when properly constructed and adapted, as the very acme of dental prosthesis. Yet the oncoming dentist should be warned, and the mature dentist advised, against the indiscriminate insertion of the dental bridge.

There are those cases, all circumstances being favorable.

aided by a willingness and ability to pay on the part of the patient, where bridges should without question be inserted. On the other hand, there are cases, in spite of the patient's willingness to have and ability to pay for a bridge, where we can serve our patient better by the insertion of a partial denture, either metal or rubber.

The indication for a partial denture in preference to a fixed bridge is where there is one or more of the following conditions present:

First—Instability of one or more teeth which would be used as an abutment for the bridge.

Second—Too great length of span between the teeth.

Third—Necessity for a ruthless mutilation of one or more good, sound teeth.

Fourth—Abnormal or undesirable articulation.

There may be other causes not mentioned, which must be left to the wisdom and judgment of the dentist.

It is really possible to construct a partial denture of either metal or rubber—small, yet well adapted and well secured—which will occasion the patient no discomfort or inconvenience. Even large partial dentures amounting almost to full dentures, may be made very secure and comfortable.

Having decided whether our efforts shall be directed towards the construction of a bridge or a partial denture, and presuming that it is to be the latter, we are next to decide whether it shall be of metal or rubber base. We are conversant with the characteristics of the different bases for dentures. We know that for either a partial or full denture gold stands pre-eminent, on account of its good conductivity of thermal changes and sensation, its non-porosity, its strength and its general adaptability and beauty.

The one exception that we might make in the foregoing statement is in favor of continuous gum for full dentures only.

The disadvantages of rubber we also know: its non-conductivity, thus keeping the mouth in an overheated and abnormal condition; its porosity and uncleanliness; its bulk and its

lack of strength, being of vegetable origin—its only redeeming feature being cheapness and ease of manipulation.

A partial denture, fitting the mouth and harmonizing properly, is still not perfect until closely and snugly adapted in some particular way to prevent accidental displacement, and the consequent discomfort or embarrassment, perhaps, caused by the loosening or dropping of the same.

In other words, there ought to be a something in, on, or about the plate itself which would successfully and surely prevent such an occurrence. This something, for convenience, will be called cleavage.

Now, a snug fit and cleavage do not mean exactly the same thing in a rubber plate as in a metal plate. We can get cleavage in a rubber plate often by mere judicious trimming, around and in the interdental spaces alone, but must not obtain this similarly in a metal plate.

The first step preparatory to making a partial plate of any material is, of course, a perfect model of the mouth. But as this exists more in theory than in fact, the more irregular the teeth remaining in the mouth, the less perfect the model will be. There will also be a discrepancy between mouth and model regarding the hard and soft areas of the mouth, but this is not so important in partial as in full dentures. Accordingly, we are usually compelled to resort to the practice of restoring the model to a limited extent by trimming about the teeth and recarving imperfect portions. This, skillfully done, will usually give in simple cases all the cleavage necessary for a rubber plate. It is also true that while the rubber plate is to fit snugly about the teeth and in the interdental spaces, the metal plate must not touch the teeth except in the region of the clasps, which are always necessary in metal plates (usually one clasp on a side).

If the metal plate were allowed to touch the natural teeth and reach into the interdental spaces, as in the case of a rubber plate, the metal would sooner or later wear a groove in natural organs at the point of contact, which, to say the least, would be detrimental, or even positively injurious, to the teeth.

The clasp around the tooth is to be broad, well rounded and

tightly fitted, so that there should occur no injury to the tooth, on account of the clasping device, if the mouth be kept perfectly clean.

We may mention incidentally that a slight sensitiveness will sometimes result in the tooth under the clasp, but it need not cause any apprehension on the part of the dentist or his patient.

An important question at this point to be considered is, "Is the ordinary partial denture benefited by a relief or vacuum chamber?" We have voiced the opinion in the class-room prior to this time that so far as the retention of the denture is concerned it is unnecessary. We are aware that the presence of even one or two teeth in an otherwise edentulous mouth is sufficient to break the adhesion of the denture, even though it had ever so good a suction, on account of an areolar hardness of the gum about the remaining tooth. It has the effect only of making the plate thicker and more clumsy, without rendering any benefit either to the denture or to suffering humanity.

Now, some persons do not desire and others cannot conveniently endure a large plate, covering the whole palatal portion of the mouth. Neither is it at all necessary, either for strength of denture, or for retention, where the denture is suitably and properly clasped and adapted.

The clasping device is particularly desirable in the case of the public speaker, the singer and others, who always desire the denture to be as firm as possible. By means of a small, narrow, band-like plate for the denture the singer is enabled to retain the natural resonance of voice, that would be lost with a larger plate and unstable attachment. Consequently it does appear that some sort of clasping device is the most logical method of retaining a partial denture, when ordinary trimming around the teeth will not induce sufficient stability and cleavage, as in simple cases of rubber base. There are several kinds of clasps:

First—The ordinary rubber clasp, continuous with the plate and a part of it, made to fit closely and partially encircle a tooth.

Second—The gold band clasp, made of elastic or platinized gold, about No. 25 standard gauge thick, one formula for which

is pure gold 20 parts, copper 2, silver and platinum each 1 part. This clasp is made to fit the tooth with considerable accuracy, although perfect accuracy is not particularly desired. It is made over a fusible metal model of the tooth to be clasped, but not swaged over it, only fitted and burnished to make a tolerably close-fitting adaptation, with cleavage. It should be moderately wide, somewhat in proportion to the length of tooth to which it is fitted—close to the gum line and of pleasing appearance. They can be made to bear close resemblance to a gold filling.

This clasp may be used on rubber dentures if desired, but is used exclusively, almost, on partial metal soldered dentures. In soldering the clasp to the plate, in order that the clasp may be sufficiently elastic, it is soldered only from one-third to one-half its length, never more than the latter. Sometimes one end only is left free; sometimes both ends may be used to grasp the tooth.

Third—Gold wire clasp, of elastic or clasp gold, about No. 20 standard gauge—about the gauge of the ordinary pin. This clasp is made by cutting a piece about 1½ inch long, doubling, bending around the tooth, adapting well and tightening for cleavage, then turning the free ends into the rubber, in opposite directions.

This clasp is very useful in many rubber partials, and may be used on metal dentures with rubber attachment. It is particularly useful in partial lower dentures on rubber, carrying the bicuspids and molars. Some advantages of this kind of wire clasp are: Easy to make and easy to anchor in the rubber; they are more cleanly; they are less irritating to the teeth, having a tendency to cause less sensitiveness under the clasp; they are cheaper, stronger and less conspicuous.

Whatever kind of clasp may be used, it is used most successfully on a tooth of normal axis and with parallel sides—a typical tooth for clasping being the superior second bicuspid, although almost any tooth may be clasped advantageously.

Another kind of clasping device which we have found very useful occasionally is constructed on the following plan:

The tooth to be clasped is crowned as usual, that the sides

of the crown are perfectly straight and parallel, without any effort at contouring. About this is fitted a wide band of gold, gauge 26 to 28; it should be quite well adapted to the crown already made, but must not fit tightly, but rather loosely. To this band is soldered a strong lug, which shall hold it securely in the rubber. One such crown and slip-band is needed on each side of the denture. With crowns cemented on tooth, then with band in position on the crown, the full impression and occlusion of the mouth is taken and the denture made in the usual way. The result will be a very tightly fitting denture. This attachment may be altered, if desired, by making, instead of an entire band around the tooth, a clasp with ends almost touching in front, leaving each end free.

Another method, for entirely gold dentures, called the telescope crown attachment, may occasionally be used. With the exception of this last-mentioned attachment, the others may all be used quite frequently. By using judgment and tact in selection for the case in hand, there is no reason why the dentist of average ability should not be able to construct a satisfactory, comfortable and firm partial denture. By the insertion of a good partial denture there will be no teeth to multilate for your patient; none to be finally lost by overwork; naturalness of appearance will be conserved, and as much, or more, genuine comfort secured for your patient as through a temporary bridge.

We would not deter you from putting on bridges, except in those cases where partial dentures will be best. But when the dentures will be best for all concerned, advise accordingly. Your intelligent patient will generally do as you advise; some will not. But if you have advised honorably, acted fairly and done your duty, the result will be with them.

NITROUS ONIDE AND ONYGEN AS AN ANÆSTHETIC.*

BY J. F. STEPHAN, D.D.S., CLEVELAND, OHIO.

It is interesting to remember that modern surgical anaesthesia has been developed in the last half century. Means for producing surgical anaesthesia were practically unknown until in 1844 Dr. Horace Wells, of Hartford, Ct., introduced nitrous oxide gas as an anaesthetic agent. Within the next three years the anaesthetic qualities of ether (1846) and of chloroform (1847) were discovered. Though the use of nitrous oxide gas to relieve pain had been suggested by Sir Humphrey Davy as early as 1800 and its anaesthetic properties were demonstrated nearly 50 years later, it fell into undeserved discredit through the failure of the first public demonstration. In 1863 it was reintroduced by Dr. Colton, who thoroughly demonstrated its safety as an anaesthetic, reporting 20,000 administrations without a single accident by the end of the next three years.

A little later Mr. J. P. Clover pointed out the advantages of air limitation and improved the methods for administering nitrous oxide gas. He also introduced the excellent system of

using this gas as a preliminary to ether.

The most noteworthy advance in developing practical anaesthesia since that time is unquestionably the administration of oxygen with nitrous oxide gas. This plan has totally changed the character of nitrous oxide anaesthesia and has given it a place in general surgery which it could not otherwise have secured.

It was generally believed for many years that the phenomena which attended the administration of pure nitrous oxide were asphyxial in their nature because unconsciousness was certainly deepest when the asphyxia was at its height. It was, therefore, believed that the admixture of air or oxygen with the anaesthetic gas would prevent or disturb complete anaesthesia. Dr. E. Andrews, of Chicago, was the first to demonstrate the fact that a perfect and tranquil form of anaesthesia could be secured by administering air or oxygen with nitrous oxide.

Paul Bert believed that nitrous oxide was an agent which at normal atmospheric pressure could only produce anaesthesia when administered by itself, and that if it were administered

^{*}Read before the Cuyahoga Medical Society, Nov. 7th, 1901.

under increased pressure with an admixture of oxygen, some of the unpleasant asphyxial phenomena of pure nitrous oxide anaesthesia would be rendered physiologically impossible. This theory was based upon the law governing the absorption of anaesthetic vapors or gases to which Snow first called attention, that is, that the proportions of anaesthetic gas or vapor, taken up by the circulating blood, will depend upon the tension of the gas or vapor in the atmosphere presented to the organism (which necessarily varies with the barometric pressure), the solubility of the gas or vapor in blood and the temperature of the blood. Bert having found in his experiments that nitrous oxide anaesthesia was almost impossible in places of very high altitude, but was very easily obtained in mines and places of increased barometric pressure, had a metal chamber constructed which was large enough to contain several persons, in which chamber the atmospheric pressure could be raised to the desired extent. His experiments were very successful, but the apparatus necessary was too complicated and costly to be widely used.

Killokowitch is said to be the first to successfully produce anaesthesia from nitrous oxide and oxygen under ordinary atmospheric conditions (1881). Later Hillisher, in 1885, reported some 3,000 administrations with but eight failures. Dr. Frederick W. Hewitt, of London, Eng., commenced his experiments in 1886, which led to the completion of an apparatus and method of administration which has made it possible to obtain an anaesthesia unequalled in previous operations. Dr. Ormond S. Golden reported the first administrations in this country in March, 1900, in which the patient was kept under the influence of the anaesthetic for some two and one-half hours.

The first administrations were made in this city in December, 1900, with S. S. White's modification of Hewitt's apparatus.

When administered free from air or oxygen the asphyxial phenomena which characterized the action of this gas must be looked upon as purely accidental, and depended upon the crude method of administration. The experiments of Andrews, Bert and others have proven that whatever the physiological action of nitrous oxide might be, it certainly possessed anaesthetic properties of its own, since the same amount of oxygen as that found in the atmosphere could be inhaled with the anaesthetic gas without endangering anaesthesia.

When deep nitrous oxide anaesthesia, free from the dis-

agreeable asphyxial phenomena, is produced, it is similar in its main features to that of other anaesthetics. The chief difference is, that in its pure state it is respirable only for a very limited time.

It seems to suspend rather than extinguish vitality. When placed in an atmosphere of this gas, sprouting seeds cease to develop, but on the addition of air or oxygen their development

is resumed and plants grow.

M. Martin placed a dog in a chamber, allowing him to breathe nitrous oxide with 15 per cent of oxygen, for three consecutive days, after which on being taken out the dog regained his usual spirits, demonstrating the fact that the mixture could be breathed for a long period of time without materially interfering with respiration or circulation.

When pure nitrous oxide is administered free from oxygen or air, certain phenomena arise which may be regarded as either phenomena of anaesthesia or the phenomena of asphyxia. anaesthetic phenomena of nitrous oxide, although apparently very different from those of ether or chloroform, are in their essential features remarkably similar. The most conspicuous asphyxial phenomena of pure nitrous oxide are embarrassed and deeply stertorous breathing, cyanosis and anoxaemic convulsions. All these may be eliminated without interfering with the anaesthetic effects of the gas by the administration of certain proportions of oxygen, either pure or as atmospheric air. There are other less obvious asphyxial phenomena, such as wide dilatation of the pupils, swelling of the tongue and adjacent structures and rapid cardiac action, which, like the more important symptoms, may be prevented or modified by similar means. About the end of the first minute the rhythm becomes altered, either by obstructive stertor, anoxaemic convulsions, attacking the respiratory muscles, or by these conditions combined.

Air or oxygen is added to the nitrous oxide to prevent cyanosis and other evidences of diminished blood oxygenation. This also permits the anaesthesia to be continued over an extended period of time. It is interesting to note that the duration of anaesthesia after admixture with oxygen is distinctly longer than when mixtures of air and nitrous oxide are employed, just as the anaesthesia with the latter mixtures is greater than when ture nitrous oxide is used.

There is great objection to the use of air as an oxygenating agent, in that it contains a large percentage of nitrogen which cannot in any way contribute toward anaesthesia. Hewitt in

his experiments with definite proportions of nitrous oxide and air has proven that complete unconsciousness cannot be maintained with mixtures containing more than thirty per cent of air. This would give us about six per cent of available oxygen, which, in the great majority of cases, would not be sufficient to produce the desired result. He noticed that with small percentages of air, cyanosis and anoxaemic convulsions were more marked than with pure nitrous oxide. The shortest available anaesthesia was produced with mixtures containing three and thirty per cent of air and the longest with fourteen and twenty-two per cent of air.

Very little is to be said in favor of administering nitrous oxide and air concurrently, for the resulting anaesthesia is liable to be uneven and unsatisfactory in its type, owing to the rapidity with which the patient passes from extremes of anaesthesia and asphyxia to that of intoxication and recovery. It will also be noted that the impure air of a crowded surgery or

room cannot be relied upon as an oxygenating agent.

If, however, we use oxygen we shall be able to replace the useless nitrogen with a corresponding quantity of nitrous oxide and thus be able to produce deep anaesthesia practically free from asphyxial manifestations. The effort should be to give the patient as much oxygen as possible without interfering with perfect anaesthesia. Deep and obstructive stertor of pure nitrous oxide is not met with when employing mixtures containing a moderate percentage of oxygen; with such a softly snoring breathing is produced. With ten per cent of oxygen, respiration becomes noiseless and free from all obstruction, resembling in all its characteristics that of chloroform in ether anaesthesia, and cvanosis disappears altogether. Anoxaemic convulsion, like evanosis, is liable to be greater with small percentages of oxygen than with pure nitrous oxide, but as the percentage of oxygen is increased, the convulsion decreases, until with six per cent of oxygen it ceases altogether. With mixtures containing a moderate amount of oxygen, from three to seven per cent, reflex and excitement movements are less liable to assert themselves, and phonation is practically eliminated. The presence of an overabundance of oxygen is evidenced by persistent consciousness and excitement and a flushed face.

In order to obtain the best form of anaesthesia, oxygen should be administered with nitrous oxide, beginning the administration with two or three per cent, progressively increasing to eight, nine or ten per cent, according to the circumstan-

ces of the case. The longer the administration lasts the greater should be the percentage of oxygen administered, and it might even be carried to twenty per cent or more.

Since it is obvious that no definite percentage of oxygen will answer in every case, some cases requiring comparatively small, others comparatively large percentages of oxygen, an apparatus such as we have will meet every requirement. It will be understood when we speak of percentages that they are not necessarily accurate, but they are sufficiently correct for our purpose since the proportion of admixtures is governed by the symptoms of the patient and is relative only. It will, therefore, be seen that it is impossible to formulate any definite rules. Considerable practice and judgment is necessary to know when to give more and when to give less oxygen. Whilst too much oxygen will be likely to produce laughter and excited movements, etc., and while it is right, should such symptoms appear, to give less oxygen, the anaesthetist must be careful not to proceed too far in the opposite direction in regulating the increase or decrease of oxygen, and should reckon what the future effects of the change will be, and act accordingly.

During the administration of nitrous oxide and oxygen the rate of respiration and pulse rate are entirely under control of the administrator and may be increased or decreased at will.

Respiration is calm and regular, the pulse is not quick and feeble as with pure nitrous oxide, but is always good, even at the height of anaesthesia. The pupils are not dilated but are usually moderate in size. The features preserve their color or show only a slight change. The greatly reduced venous engorgement during the administration of nitrous oxide and oxygen makes it a much safer anaesthetic than pure nitrous oxide in patients prone to apoplexy. There is a notable absence of the excessively sweet taste and the disagreeable suffocating sensation experienced during the first stage of nitrous oxide anaesthesia. The dreams, if any, are those of pleasure rather than of horror.

While there is no form of anaesthesia known which is so devoid of danger, there is no form of anaesthesia which requires greater skill in the anaesthetist.

Anaesthesia is known to be present by the loss of conjunctival reflex, a regular and tranquil breathing, of a softly snoring character, flaccid muscles and fixed eyeballs. In some cases the muscular system instead of being relaxed is rigid at the height of anaesthesia, but such cases are exceptional.

The anaesthetist's attention should be chiefly concerned with respiration. The symptoms of shock should not be mistaken for symptoms of anaesthesia. In cases of shock evidence tends to show that the heart's action is the last of the great vital functions to fail, and since the heart's action is greatly dependent upon efficient respiratory action, it is wise to watch respiration instead of the pulse, as that is affected first. General anaesthetics depress while nitrous oxide stimulates, therefore lessening the danger from shock by keeping the system from reaching an exhausted condition from which it cannot rally. Materially lessening the time of anaesthesia, it lessens the danger from shock.

Aside from the dangers of the operation there is little or no danger from the use of nitrous oxide and oxygen in combination as an anaesthetic. Hewitt reports 14,000 administrations in which only two or three cases of embarrassed respiration arose, and states that so far as he knows no fatality has as yet been recorded.

Recovery from the effects are very satisfactory although not as speedy as after the use of nitrous oxide alone.

Disagreeable after-effects are very rare; nausea or vomiting is a little more common than with the use of nitrous oxide alone.

In extended operations a sufficient quantity of gas should be on hand. It is absolutely necessary that an assistant keep the apparatus in perfect working order, warming the valves of the cylinder to prevent freezing and keeping the bags filled with gas, so that the attention of the anaesthetist need be directed only toward the patient and the regulation of the quantities of gas consumed. The patient's face should be turned on the side with a mouth prop in place so as to permit of the removal of secretions which may gather in the mouth during anaesthetization. The surgeon should begin operating as soon as complete anaesthesia takes places rather than to operate during overanaesthesia, since should shock occur, the patient would be in a better condition to rally than if the system were overburdened with the anaesthetic. The usual precautions against accident during the administration of an anaesthetic should be taken so as to guard the patient against any mishap.

INTERNATIONAL DENTAL FEDERATION: FIRST GENERAL MEETING, HELD AT CAMBRIDGE, ENG., AUGUST, 1901.

(Continued from page 527.)

INAUGURAL ADDRESS.

Mr. Chairman and Gentlemen—Last year, the twelve hundred dentists who attended the Third International Dental Congress, which was held at the time of the Paris Exposition, decided to preserve the professional organization created in view of that Congress by organizing the International Dental Federation, with its Executive Council and an International Commission of Education. The dentists wanted to form a universal union of the nature of that formed several months afterward in the case of the sociétés savantes while waiting for the time when diplomats and governments should realize this union in all the branches of human activity, making the latter a compact entity. According to this decision, a meeting was held in Paris immediately after the Congress.

This year we have come to England to hold our second meeting. The welcome that has been tendered us, the prominent men that have taken part in our discussions, and the first results of our work show that the organization newly created by the Paris Congress supplies a necessity of our epoch, and that it will produce useful results for the advancement of the science of odontology. I have maintained that the meetings of the International Dental Federation attract the choice men of our profession. And indeed they are choice men—those who do not hesitate to leave their families, their occupations, and their countries to discuss topics not of direct or immediate interest to them, but that constitute the problem of the education of their successors. Our confreres will certainly ratify the statements just made when they see the list of practitioners that have attended our meetings representing sixteen of the most important countries of Europe and America.

As far as our labors are concerned up to the present, they have consisted mainly of an exchange of ideas in view of organizing and devising a plan of work for our future meetings. The more complex and important a body is, the longer must be its period of organization.

The birth of the new element of professional progress took place last year in the midst of great ceremonies, and in the presence of the most authoritative representatives of the dental profession of the world, in a meeting presided over by one of the greatest savants of the University of Paris, Professor Gariel, the delegate of the government. It has been the desire of the Executive Council that the second meeting, which constitutes for our International Federation a sort of scientific baptism, should take place with the same ceremonials, and for this purpose it has requested the eminent vice-chancellor of the University of Cambridge to stand as its godfather.

The Executive Council has honored me with the delicate mission of indicating the purpose that we are working for. Pardon me, gentlemen, if I confess to a feeling of timidity in having to address so distinguished an audience, in view of the knowledge and talent properly required for such a task. I shall, however, endeavor to fill any lack in those two factors by contributing all the good will of which I am capable.

Our work is one in which we have to deal constantly with difficult problems. In the first place we have the diversity of languages; this, however, is an obstacle easily overcome. There is another one of greater magnitude, brought about by the character of the different countries in which we live, by the difference in the legal conditions of their organization, and especially in their degree of evolution—evolution which is in some slight degree the cause of our diversity of opinions. We must make great efforts and many mutual concessions in order to harmonize our national conceptions into the international plan which it is our wish should emanate from our discussions. A certain amount of work is also necessary, in order to set forth this program in such a way as to be understood and accepted by every one of us.

It seems to me that it is a daring act for me, the modest representative of a science as yet new, to stand here in this old university, before such distinguished professors, and talk to you on education—that is, on one of the highest problems, even though it be limited to the training of young dental surgeons. Therefore, I have aimed to shelter my affirmations under the authority of men whose names and writings are highly valued in this connection. Two thoughts that I have borrowed from Michelet have encouraged me. One is that education is the first, the second, and the third part of politics—that is, its pure essence; and the other is that in an advanced society teaching ought to be the function of almost every one.

While working at the preparation of this paper, my mind was impressed with the importance—for the future of humanity—of an Anglo-French combination. And so I consulted alternately the French and English philosophers. I went from Michelet to Herbert Spencer or Stuart Mill, and from Roger Bacon to Descartes, in order to borrow from them the general principles which must guide us in the preparation of a national program of instruction in the midst of the contradictory ideas which are contending for the direction of public education. It has been through the inspiration of their principles that we are able to know the value of every science which is to be part of this program, and adopt a method of appreciation of their worth; and also in order to know the means of differentiating between studies having an intrinsic value and those having a merely conventional one, and between those that are valuable from the view-point of knowledge and those that are important from the standpoint of education and discipline.

We shall then understand better the difficulties of education in general, with the harm that can be done to the mind by the studies that may enter into the formation of a program or by the faulty order in which they are taught; also the necessity of proceeding from the concrete to the abstract rather than from the abstract to the concrete. It will be easier to understand the necessity of comparing these general principles of education with those that inspired the curricula of our schools, prepared empirically and according to the needs of the respective countries.

Among the general notions capable of directing us in our work, and that can be transformed into accurate proportions applicable to the teachings with which we are concerned, I will quote the following paragraph from the admirable work on Education by Herbert Spencer: "One of the conclusions at which we arrive is that in every branch of knowledge we must proceed from the empirical to the rational. A leading fact in human progress is that every science is evolved out of its corresponding art. It results from the necessity we are under, both individually and as a race, of reaching the abstract by way of the concrete; that there must be practice and an accruing experience, with its empirical generalizations, before there can be science. Science is organized knowledge, and before knowledge can be organized some of it must first be possessed. Every study, therefore, should have a purely experimental introduction, and only after an ample fund of observations has been accumulated should reasoning begin."

It is curious to observe that this proposition of the English philosopher can be easily applied to the organization of dental education, such as has been very well understood by the different nations, especially by the United States, England, and France. In fact, in the English schools the apprenticeship of dental prosthesis precedes the special scientific and medical studies, which, in the evolution of the profession, is according to the historical evolution indicated by Herbert Spencer, and according to the principle of the subordination of the abstract to the concrete. We will endeavor to inspire ourselves with the principles of those great thinkers who have studied education in general, that we may apply them to our particular branch of education, whose purpose is to form good odontologists.

It is not an indifferent question, for the state and for the people at large, that odontologists should receive a rational education in proportion with the progress of their special science—an education capable of developing their qualities to their maximum.

It is not necessary that I should say anything to you upon the utility of the dental system for the preservation of health. At an epoch not very remote from this good teeth were an indispensable requirement of the soldier, who, however, had to open cartridges with his teeth. Progress in the military art has caused the disappearance of this practice. The state should by no means, just for this reason, be indifferent concerning the organs under our supervision. The teeth are always necessary for the development of the child, as well as for the conservation of health in the adult. Dentistry should hence be in evidence in the school, in the army, and in all aggregations of human beings as an important part of hygiene.

Likewise, it seems unnecessary that I should call the attention of dentists to the importance, for his dignity and for the position that he should occupy in the state and in the public estimation, that he should receive a complete and rational education, which would permit him to render to his fellow-citizens all the services within his province. A good education for the dentist is for the state a question of public interest, as it is for the dentists themselves a question of professional advantage. This for a long time has been perfectly well comprehended by our *contrêres*, as can be seen by the papers on these questions that were read at our last professional meetings.

From the foregoing, it can be seen that the international union that we are endeavoring to bring about is useful and desirable, but the obstacles to which I have already referred, obstacles with regard to the laws, customs, traditions, the routine, the prejudices of every country, are numerous. There are others inherent to the conditions of evolution of odontological science, and to which I shall refer only in brief. Odontological science, from the view-point of special science, is relatively a new one, at least it has been recognized as such only in recent times. Recent historical works show that in all refined communities, in Egypt, in Greece, in Rome, the dentist existed in remote times as a special practitioner.

At the beginning, when medicine was closely connected with the priest-hood, the priest, and later on the physician, were able to treat the disorders of the teeth as well as those of the other organs of the body, but soon a different kind of treatment became necessary—the prosthetic or restorative one, involving a mechanical art with which the physician was not familiarized and to which he was not sympathetic, according to the expression used by Dr. Kirk. It is this prosthetic art that gave birth to the prosthetic dentist.

The evolution of odontological science has taken place not without a certain amount of antagonism between these two kinds of practitioners; the physician, on the one hand, occupying himself with the purely medical phase of the diseases of the mouth, and the specialist of dentistry of the prosthetic phase, being a simple artisan at first, becoming later on the surgeon-dentist, having added gradually to his technical training in order to reach that step—the study of the medical branches directly applicable to the needs of his clientèle.

As Dr. Kirk has very wisely said, it is he who can be looked upon as the departing-point in professional dental evolution in all countries. It is by him and for him that this evolution has taken place. It is for him that in 1700 special laws were framed in France; it is for him that later on, in 1726, Fauchard, the father of modern dentistry, wrote the first special and complete work on dentistry. It is for him that in 1838, in Baltimore, Harris and his friends founded the first dental school, separately from the schools of medicine, after an interesting declaration of independence, which can be considered with Fauchard's book as the acte de naissance and the scientific basis of odontological autonomy.

A certain number of dentists, holders of the medical degree, considering that medicine and dentistry should be indissolubly ligated, did not adapt themselves to the plan that dentistry should be taught and practiced as a specialty of medicine. And, as Dr. Kirk says, this opinion persists in spite of the success obtained by the dental schools in all the countries of the world, and also notwithstanding the fact that the separation between medicine and dentistry is becoming more accentuated from the standpoints of both education and practice. Some countries of Europe have followed this doctrine, and have arranged accordingly education and practice.

It is understood that according to whether one or the other principle is accepted, the solution differs as far as education is concerned. In fact, if odontology is considered as a simple medical specialty, as ophthalmology, laryngology, and gynecology, it suffices that the student should first con-

clude his medical education in a medical school, and then if he thought it necessary he would go for a few months to a dental school in order to familiarize himself with the technique of dentistry that he did not learn in the hospitals. In the second case the student enters from the beginning the dental school, where he completes his entire education, just as the student in pharmacy studies his profession in a school of pharmacy, with the addition, if necessary, of a few special courses at the school of medicine or at the hospital.

In order to cause the disappearance of the antagonism of these conceptions, and to dissipate the difficulties that they oppose to the progress of our teaching, it is necessary, according to Herbert Spencer, to bring to light the facts which have been accumulated in sixty years of teaching in the countries where deatal education has been organized in an empirical manner; that is, according to the needs and necessities of the time. For this purpose, we have to make appeal to impartial statistics. This is the first part of the work of the International Commission of Education. This introductory work is important from the standpoint of the direction in which dental education should go, and also from that of the position that this teaching should occupy in the universities. But this question is not the only one that requires our attention; there are others, of secondary importance, it is true, but nevertheless questions which the representatives of both doctrmes could discuss to advantage and agree upon. Among these we should include the problem of the necessary preliminary education for the dentist.

On this question we also see the reappearance of rivalries of the classical and scientific education with regard to the utility of the mechanical and preliminary professional education, such as is given in the United States in the manual training schools, in France in the Ecole Diderot, as adopted by the Paris Congress, and such as we see it in London in the Institute of Technology as organized by our friend Cunningham. We will also mention the question of the extent of the scientific programs, medical or technical, theoretical or practical.

In order to determine exactly the studies which should enter into the program, we must first of all determine the duration of these studies. It is evident that when the time shall come for the discussion of the quantity of medical sciences and of mechanical art that should compose the program of the future dental surgeon we will again find the partisans of the two opposite principles. But then one factor interposes itself like an arbitrator; I mean the duration of the course—the number of hours that could be reasonably consecrated to dentistry. "Had we time," says Herbert Spencer, "to master all subjects, we need not be particular." To quote the old song:

Could a man be secure That his days would endure, As of old, for a thousand long years, What things might he know! What deeds might he do! And all without hurry or care.

But "we that have but span-long lives" must ever bear in mind our limited time for acquisition. It is superfluous to declare that we must limit our-

selves to the useful, to the essential, to the indispensable. "It is not necessary," says Descartes, "that the honest man should have read all books, neither is it necessary that he should have learned everything that is taught in the schools. Moreover, it would mean a mistake in his education if he had consecrated too much time to the study of letters; there are many other things to be done in life." Hence the time that it is possible to devote to study will be co-arbitrator with another factor—the number and nature of the operations which the dentist is called upon to perform at the present time in the branches of operative and prosthetic dentistry and anæsthesia.

Lastly, the results obtained in the different educational centers, with the different systems in vogue in America. England, France, Switzerland, Austria. Germany, and Russia, will also enter in this account. This is why the active collaboration of the men of all countries is necessary. Then we will see that by placing ourselves on an international standpoint all our discussions will lose some of their acerbity and intensity, and we will get rid of the irritating questions which often refer to minor considerations—mere words or purely local designations—rather than to real division.

By elevating the discussion to a philosophical standard, we shall agree that odontology is a science which tends to the preservation of man; it is a biological science. Hence it is perfectly possible to conceive, according to Professor Eliot, president of Harvard University, recently quoted by Dr. Kirk, a new university where the teaching of biological sciences would be established on a broad basis, so that all students, according to the purpose of their studies in relation to the profession chosen—so that practitioners or savants, physicians or dentists, should be able to take up the fundamental knowledge which they would require while following the study of a specialty not taking up more than about four years, and to conclude by obtaining the final diploma of doctor in this specialty.

Under such conditions dentistry, says Dr. Kirk, would have a place in medical education or, better, in the university in proportion to the needs of its practice, and the antagonism to which we have referred would not exist.

But, no matter what the future reserved to this proposition is, in the meantime the discussions of the International Commission of Education will contribute to advance in our several countries the question of the position of the dental surgeon and of his education. We want to work for the benefit of our successors, and prepare the best program of intellectual, moral, and physical education. Besides, in this work there is a thought capable of giving us much satisfaction—the thought of love of humanity; and love, according to Auguste Comte, is the secret of human nature, the secret of the world.

We have applied to this work the principles of thinkers and of philosophers of whom humanity feels honored. By the welcome that has been tendered us we are assured of the support of the savants of this university. This is our encouragement, and also our reward.

This work is new; it will have to be developed by others, and, as stated by that great man who went through this university—Roger Bacon—"Many will pass and science will grow."

CURRENT ARTICLES.

[Condensed for The Ohio Dental Journal readers.]

DISINFECTION OF DENTAL INSTRUMENTS.*

BY W. D. MILLER, M. D., D. D. S., BERLIN, GER.

As a result of my investigations I came to the conclusion that the five per cent. solution of lysol was the most effective material we possess for sterilizing the hands and instruments chemically. Since that time various other remedies have been recommended for the purpose, among them formalin and spirit of soap. The former has not been universally adopted, principally on account of its disagreeable, pungent smell and irritating effect upon the mucous membranes.

Spirit of soap, however, has been recommended by various authors since Mikulicz reported favorably upon it in the Deutsche Medizinische Wochenschrift, No. 24, 1899. As lysoi has an odor which to some is unpleasant, and which is easily communicated to the atmosphere of the whole room unless particular precautions are taken, I was much pleased at the prospect of getting an antiseptic possessing all the advantages of lysol without its disagreeable odor. In order, however, to assure myself that spirit of soap is as reliable as lysol, I carried out a series of parallel tests between these two materials by the method given above. Of these tests (fifteen in all), eleven resulted in favor of lysol, one in favor of spirit of soap, and three were inconclusive. From these results I was forced to the conclusion that spirit of soap is not equally reliable with lysol, so that, while I now use it for disinfecting the hands. I still adhere to the five per cent, solution of lysol for the sterilization of instruments.

As repeatedly stated in former publications, I always have two complete sets of instruments in use, and while I work with the one the other lies in the lysol solution for at least half an hour. Burs remain in it for from one to four hours, although after mechanical cleansing one-half hour might be considered sufficient.

^{*}Extract Dental Cosmos.

I use for the purpose a plain glass vessel filled about three inches deep with the solution. Double-ended instruments I never employ, as it is impossible to sterilize them without laying the whole instrument into the solution. Nor do I use any conesocket instruments, as infectious matter easily accumulates at the joint where the point is screwed into the handle, which necessitates the screwing off and mechanical cleaning of the point as well as the handle every time the instrument is used.

For similar reasons, dental instruments should be perfectly smooth and polished, and the handles, as far as they come into contact with the mucous membrane of the mouth, should not be ornamented in any way. Particular attention must be paid to the scalers, as lesions of the gums are scarcely avoidable in using them. Consequently, in addition to the lysol treatment, as an extra precaution, just before using them I dip them into oil of cloves or concentrated carbolic acid and draw them through the alcohol flame, so that the liquid catches fire and burns off. With smaller points, one must see that not more than a minute quantity of the liquid adheres to the instrument, otherwise the temper of the latter is sure to suffer; with larger points, the danger is not so great.

In the same way, I sterilize spoon-shaped excavators, used for clearing out cavities deep under the gums, where the soft tissues are sure to be wounded.

In all cases where infectious diseases of the mouth are present, particularly where any symptom indicates the possibility of syphilis, the instruments must be sterilized with boiling water, about two per cent. of soda being added to prevent rusting. An apparatus, which appears to me adequate for the purpose, has just been constructed by Witkowski, of Berlin. The chief objection to the general use of boiling water for steringing instruments lies in the fact that, notwithstanding the use of the soda, it is very difficult to keep them bright and polished.

ADAPTATION OF DENTURES.*

BY A. O. HUNT, D. D. S., CHICAGO, ILL.

After all that has been said and written upon the methods of retaining dentures, whether it is atmospheric pressure, capil-

^{*}From Dental Review.

lary force, adhesion, etc., there is a common agreement that when perfect adaptation is secured, the best conditions prevail and the result is accomplished. I think we can find no better term to express what we mean, than adaptation. In the use of this term, however, much more should be understood by it than now. The denture should be adapted to all parts of the oral cavity that can in any way affect the retention or displacement of it. Let us consider what these may be. For a full upper denture we have the hard and soft parts of the palatal portion, the attachments of the muscles along the buccal and labial border. We have parts that do not change materially, and parts that are constantly changing. If, then, we can secure an equal bearing over the hard and soft parts alike, a firm resting place for the denture on those parts that change the least, with a freedom of movement of those muscles that are likely to displace the denture, and use those muscles that will retain it, we are working upon an intelligent basis with every promise of success.

First, for the hard and soft parts, compensation must be made either on the cast or in the impression (both of which are in a measure faulty) for the greatest pressure or bearing on those parts that yield the most to pressure. This to be found out by a careful digital examination of every part upon which the denture is to rest, and accurate notation made upon diagrams. With the cast, proceed to make such compensation as the conditions have indicated. Scrape from the palatal surface of the plaster in such locations as the diagrams show the soft parts to be, to the depth varying from the thickness of tissue paper for soft, to that of heavy brown paper for very soft places, corresponding to the contour of each several place. There is a great variation in the forms of these soft places. In cases where the anterior portion of the alveolar ridge is soft and flabby, it is not necessary to treat that portion of the cast.

For the upper jaw and the buccal and labial walls of the alveolar ridge and for the posterior margin of the plate, scrape in the same manner as in the palatal portion, so that in the finished denture the margins will be firmly pressed into soft tissue all around.

As to the muscles, these must be forced upward to their normal positions by extending the margins of the plate higher between the muscular attachments than elsewhere. To find just where these attachments are, lift the lip upward and outward to the fullest extent, at the same time moving it laterally,

observing the full action and marking with a sharp instrument on the cast, the form and extent of the movement. These marks will show in the finished denture and will be the guide for cutting away the material to allow for their free movement. They will also indicate the locality where the margin of the plate is to finish so that the muscles cannot exert downward pressure.

After this, locate the margins of the plate definitely so that the margin shall be in close contact, even imbedded in the soft

tissues at all places where the muscles do not interfere.

Next, the parts that do not change. The palatal portion of the mouth, the region of the malar process backward above the maxillary tuberosities and the canine eminences are those portions of the upper jaw that undergo little or no change. Five places in all.

For the lower, the space between the attachment of the buccinators and the top of the alveolar ridge and the corresponding

places below the inferior cuspids; four in all.

The muscles of expression all anastomose in the orbicularis or is of the mouth. If one moves they all move; they are in constant motion and unless an entirely free movement is allowed them, they are quite sure to displace the plate.

In the upper jaw we have no depressor muscles; but in the loss of the teeth, especially the cuspids, the orbicularis muscle droops to a considerable extent, and unless this is broght back to its normal position by extreme elevation at the cuspids and at the region of the tuberosities, this excess of loose inactive muscular tissue hangs as a dead weight on the outer rim of the plate and with the slightest movement of the facial muscles, acts as a force to displace the denture.

In the lower jaw we have no elevating muscles on the outer margin; along the lingual border we have the mylohyoid extending on both sides; the sublingual, the attachments of the geniohyoid and glossus muscles, which in action lift the denture from the gum. In forming either the upper or lower denture, the shape should be such that the buccinators shall be one of the great factors in retaining the denture in position. In regard to all the others whose movements are detrimental, a place should be made in the plate for the full action of all muscles where the margin extends over and above them.

The buccinators and the orbicularis oris muscles can both be utilized to retain a denture, if the denture is so finished that

they can grasp or press into and against the plate.

In compensating on the cast a "relief" is sometimes used. By some this is characterized as an air-chamber. If it is used to raise some hard part of the cast and its edges conform to the tissues, it cannot in any sense be called an air-chamber, as in a very short time the portion that has been raised will be in contact with the tissue underneath.

After all, the most important part of the construction of a denture is the securing of a good impression. While plaster-of-paris is undoubtedly the best material for this purpose, it will not give what is desirable in the first effort; at it will not push or lift the lips and cheeks back to a normal position. The only way I have of accomplishing this, is to take a first impression, make a cast from it; then cut above the margins so given in the region of the cuspids and over the tuberosities sufficiently to carry the impression material high up in those localities. Then make a tray of modeling compound over this cast so prepared and take a new impression, which will give the result desired.

For the lower, a first impression is taken with ordinary beeswax; when the impression material is nearly down to its place, place the fingers well back in the mouth and press the buccinators well outward; then forcing the material firmly down on the jaw at this region, also below the region of the cuspids. Press the wax well down on the lingual sides all around. Remove and cool. Cut away from the lingual side all surplus in order that the muscles shall have a free normal movement. Fill this impression with thin plaster-of-paris, replace in the mouth, press firmly down, at the same time instructing the patient to thrust the tongue forward out of the mouth, saying, "farther, farther, farther," until the plaster has set. Whatever margin is shown in the cast along the lingual sides will be the definite margin for the finished plate; as by this method you have obtained the full action of all the elevating muscles.

These descriptions apply to the making of dentures on plastic bases. Where metal bases are used particularly for the upper cases, something more is necessary. As the hard parts of the mouth are the prominent ones in the die and are the first to be battered or changed in the swaging, it will be necessary to make a relief of wax or metal on the cast of varying thickness as indicated by the mouth. These should also conform to the contour of those places. In the location of the muscular attachments the cast should be built out with wax to correspond to the movement of the muscles as indicated by the examination.

It is almost impossible to leave this subject where it is, as

the consideration of the retention of artificial dentures involves so many other things, such as the arrangement and articulation of the teeth to cover the variations in the manner of accomplishing mastication in different individuals, the relation of the lips and face to the teeth and so forth; but enough has been presented, I hope, to elicit a free discussion of the subject.

BRIEFS.

[Condensed from Contemporaneous Literature for Ohio Dental Journal.]

DARK JOINTS.

J. B. HODGKIN.

Touch the dark places with a very little nitric acid. It dissolves off the stain. Wash off the acid, and you will be pleased with the result.—Dental Hints.

TO REPAIR CONTINUOUS GUM WORK.

D. J. M'MILLAN.

An easy and very simple way to repair a broken continuous gum plate, is to coat the broken surfaces with liquid silex and place pieces in position, and bake.—Dental Clippings.

HOW TO HARDEN PLASTER CASTS.

Plaster models can be made so hard that they will bear the driving of a nail into them without cracking by immersing them in a hot solution of glue. The model should be allowed to remain in the solution until it is completely saturated.—Sci. American.

TO QUICKEN TACTILE IMPRESSIONS.

W. J. YOUNGER.

The handles of scalers used in pyorrhea should be coated with sealing wax at the portion of the handle where power is to be applied. This enables the operator to apply the instruments more definitely, as he gets a better appreciation of conditions at the working point.—Register.

VASELIN AS A PLASTER SEPARATOR.

J. H. JUDD.

The following is the simplest and yet most effective method I have tried for separating plaster surfaces. To remove the model from a plaster impression, coat the surface of the impression with vaselin, removing all excess; separate as soon as the plaster has thoroughly set.—Items.

CAUTION IN THE USE OF ARSENOUS ACID. E. TOUVET-FANTON.

When using arsenous acid care should be taken not to apply it to a cavity that had been previously treated with hydrogen dioxid, as this compound is an oxidizer and would convert arsenous into arsenic acid, which is more caustic, more diffusible, and more toxic than arsenous acid.—*l'Odontologie Cosmos*.

TO REMOVE WAX FROM TEETH.

A correspondent states that he has found the use of gasoline to clean wax off teeth very efficient. He regards it as practical for dentists who have not the use of Bunsen burners. Wax up the cast as you want it. To smooth the wax thoroughly, take a small piece of cotton saturated with gasoline and wipe over teeth and wax.—Dental Brief.

LEAKY VULCANIZERS.

Should a vulcanizer leak during the vulcanizing process, the leak can be successfully stopped by mixing *starch* into a thick paste, and packing it round the joint with a piece of wood.

This is, of course, only recommended as a temporary remedy. After the vulcanizing is completed a new packing should, if necessary, be inserted.—Quarterly Circular.

TO PREVENT UNSOLDERING.

H. J. GOSLEE.

In cases where an investment is not indicated it is frequently desirable to observe some precautions to avoid the unsoldering

or re-fusing of parts previously united, which is usually accomplished by the mere presence of the investment itself when such is used. This may always be very easily prevented by coating or treating such surfaces with crocus (ferric hydrate), or a liquid solution of plumbago, or whiting in water or alcohol.—

Extract from Items of Interest.

LOCAL ANESTHETIC FOR INJECTION.

T. J. JONES.

As far as my experience goes, this formula can be used ad libitum:

Sulfate morphia, ¼ gr.; Muriate of cocain, 3½ gr.; Listerine, ¼ oz.; Pure salt, 1 gr.; Distilled water, ¾ oz.

-Extract Dental Cosmos.

CORRECT METHOD OF TAKING A BITE. MORLEY BRADDON.

If an upper plate is to be made, take impression and get model in usual way, then make a base-plate of compound to fit the palatine surface of the model; then build a rim of wax around the rim of this base-plate for the lower teeth to bite into. This is inserted in the patient's mouth. The lower teeth biting up into this wax leave their impression in the wax, and when setting up on the articulator the models of upper and lower will be in proper relation to each other, and a correct articulation secured.—Dominion Journal.

CARE IN SETTING CROWNS.

W. H. NEALL.

Unless great care is employed and the superfluous cement thoroughly dislodged, an angry, reddened gum is the consequence, and a general uneasiness about the root prevails, so that the patient is prone to make complaint. Cases have been noted, months after the insertion of a band crown, where pieces of the cement have been removed from the gums nearly at the apex of

the root. Hence it is reiterated that, unless the greatest care and judgment are exercised, the setting of a gold crown or a banded porcelain crown is attended by grave results.—Dental Brief.

TO CLEAN BURS AND CORUNDUM WHEELS.

Have a glass vessel—say a toy tumbler—about I oz. capacity, and keep it half filled with a saturated solution of washing soda, into which drop the burs after using. When they have soaked for an hour or two—if left longer they do not rust—the debris is quickly removed with a nail brush.

The solution is equally effective for cleansing and renewing the cutting power of corundum points and wheels. They should not, however, be left in it more than three or four hours, as it softens the shellac used in their composition. After soaking, a nail brush and warm water brings back their cutting surface equal to new.—Journal British Dental Assn.

ATTACHING BACKINGS.

J. H. JUDD.

In the August number of *Dental Brief* I noticed an article entitled "Bending Pins," telling how to avoid breaking the porcelain in bending pins of facings. It seems a better plan to me not to bend the pins at all; for in doing so, if you do not crack the porcelain you are apt to enlarge the holes in the backing, so that borax will get through; and this is where the trouble comes from, in my judgment. I sharpen my pins with sandpaper disks. This enables me to have a close joint when my backing is rubbed down, and also gives a clean surface on my pins for attachment of solder. When my backing is rubbed down thoroughly, I hold it in place with my fingers while I drop a little paraffin on the pins and backing to hold it in place until invested, then scald out the paraffin.—*Dental Brief*.

BURNISHED GOLD TIPS.

OTTO J. FRUTH.

These tips are used to take the place of extensive gold fillings in the anterior teeth. The method of making is as follows: All undercuts are first filled with cement, and the tooth is then ground off perfectly smooth. A piece of pure gold plate, 34

gauge, is then burnished over the end. Two small holes are then drilled on either side of the pulp-chamber, and, after punching two small holes through the gold plate, iridio-platinum wire is inserted in those holes; the gold plate and pins are then carefully removed and tacked or soldered fast with crown gold; then taken and reburnished to the tooth. It is now ready to be built up in the laboratory. It is then set on the tooth with cement and ground and polished down to proper contour.—Western Dental Journal.

TO TIE A MATRIX IN POSITION. E. K. WEDELSTAEDT.

The tie is simplicity itself. A half surgeon's knot is first made in the center of a piece of thread about eighteen inches long. It is simply placed over the tooth and matrix and then the thread is drawn tight. The usual knot is then made on the buccal side of the tooth. The half surgeon's knot should be placed on the lingual side of the tooth. By using the Wedelstaedt tie, a double ligature is easily and quickly placed around a tooth or a tooth and matrix. The tie is also used around the crowns of teeth to hold the rubber dam in its position. As a foundation where a number of teeth are to be ligated with thread, I have found it of greatest value. Its great usefulness will quickly suggest itself to any practical man.—Dental Review.

DO NOT USE HOT-AIR FOR DRYING ROOT CANALS. W. E. HARPER, CHICAGO.

In reference to the drying out of root canals, never use heat, because the enamel is easily checked by its use. Because of the different amounts of organic material in the dentin and enamel, the shrinkage is different and enamel is checked. I am convinced that an immense amount of damage is done by this manipulation. Dr. Black, in his work upon teeth, found that teeth checked if allowed to stand in air ten minutes after extracting from mouth. Now, if enamel can be checked by the dissipation of so small an amount of moisture as that, is it not reasonable to

suppose that drying out with heat when you have the crown of a tooth excluded from moisture by the use of rubber dam, and in blowing in a blast of air from the root dryer you take up more moisture from tooth than is best for it? Proceeding as we have suggested, if moisture is present it is made sterile, and nothing is gained by drying it out.—Extract Dental Register.

ANNEALING TIN.

But few practitioners seem to be aware of the wonderful degree of plasticity which can be developed in tin foil by careful annealing.

Dr. T. D. Shumway has repeatedly called attention to the desirability of annealing tin before inserting it as the filling material, and in addition to the methods which he has suggested viz, of direct annealing on mica over a flame or by the use of a heated plugger—most excellent results can be obtained by the use of the Custer annealing tray, in which the degree of temperature is practically controllable and may be maintained at just the right point with a graduated electrical resistance. should be borne in mind that the annealing process should not be carried on for an indefinite length of time, as at that elevated temperature oxidation of the surface of the tin occurs with considerable rapidity and interferes with the homogeneity of the resulting filling.

The pellets or pieces of foil should be placed upon the annealer, previously regulated to the required temperature.

The difference in working qualities developed by the annealing process constitute an improvement so great as to almost include tin foil among the plastics.—Dental Cosmos.

A METHOD OF USING LOGAN CROWNS IN METAL PLATE WORK.

W. D. TRACY.

I think it is pretty generally recognized that the bicuspid plate teeth as furnished by the dental supply houses are not all that they ought to be, especially from the anatomical point of

view; and in order to get a grinding surface that was adequate, and one which would not display the gold, I have for some time been using Logan crowns in such work.

The first step is to get a bicuspid crown that is best adapted to the space, shade, expression, etc., and then cut off the pin. The little depression around the base of the pin is then filled up flush with gold foil, after which the tooth is ground so that the cervical edge at the buccal aspect comes nicely up to the plate; then, to allow the solder to flow in nicely, it is beveled off at the palatal surface, leaving a V-shaped space, into which the solder will run. If there is any difficulty in having the solder flow freely, a little gold foil may be put in to coax the solder in nicely. A Logan crown used in this way gives the desired articulating surface, a better esthetic effect, and a natural feeling to the tongue, and if those who have not used the method will try it, they will have considerable satisfaction with it, I am sure.—

Extract Dental Cosmos.

SALIVA A PROTECTION AGAINST CARIES. A. MICHEL.

The author states that one function of saliva is the cleaning and washing of the teeth to free them from the food remains, and the making slippery the bolus of food constitute the principle functions of the saliva. Its ability to change starch into sugar is only useful in that it facilitates the cleansing process by changing insoluble starch into soluble sugar. Apart from its function as a mechanical cleanser, two other activities are to be mentioned which help preserve the teeth. In the first place, its ability to neutralize acids; in the second place, its antifermentative action.

The author is led to the belief that in regions where there is a lack of lime in the drinking water caries is increased. This comes about in two ways: first, because not enough lime is present for the proper forming of the teeth, and hence they are structurally defective; secondly, the alkalinity of the saliva is lessened and it is not able to properly protect the teeth against the acids formed in the mouth.

After making many analysis of saliva, and noting the degree of alkalinity and also the frequency of caries, the author comes to the following conclusion: where a lessening of caries

is found there is found an increase in the amount of sulphocyanic acid and an increase in the alkalinity of the saliva.—*Monat. Zahuheilkunde.*

TREATMENT, BY CROWNING, OF A ROOT IN WHICH A POST HAS BEEN FRACTURED.

JOHN GIRDWOOD.

I choose a trephine into the hollow of which the fractured pin will fit without injury, and by means of the engine carry it as far up as is considered expedient. Round the end of the fractured pin and into the groove made by the trephine a tube of English dental alloy is fitted and soldered to a cap and band, as in an ordinary Richmond crown. This device I have found to give the most secure grip with a minimum sacrifice of tissue. It will be noted that such a tube, band, and cap afford really a triple grip. First, the tube grasps the broken pin; second, the tube is held externally by the surrounding dentin, and, third, the circumferential band secures both. It will be obvious that such a tube is immeasurably better than a solid post of equal length, the latter being held only externally. The tube, further, need not be inserted over the fractured pin to any great depth, as would be necessary were a solid pin used. Its tight encircling of its broken predecessor makes it almost continuous with it, and enables it to utilize the anchorage of the whole length of the original post. The stability to be obtained from a tube only oneeighth of an inch long will be found, to those who have not tried it, to be perfectly surprising.—Cosmos.

A FEW DENTAL DON'TS. F. H. METCALF.

Don't be afraid to instruct your patients as to the importance of thorough cleanliness of the mouth. We should be educators of the public.

Don't allow patients to continually break their appointments. It is a habit with some. A moderate degree of firmness will remedy the evil in most cases.

Don't fail to cultivate self-reliance and self-respect. They

inspire confidence. We are liable to be taken at our own estimate.

Don't be afraid of your rubber dam; patients are observing. Every operation justifies a fresh cut. A miniature clothes line hung with rubber is not an ornament even in the laboratory.

Don't lose your patience with children. They will grow up in time and then you will want them in your business. In the meantime it may be necessary to seek the seclusion of a swearroom occasionally.

In conclusion, don't be rough. A reputation of being gentle and sympathetic will go a long way both to obtain and retain a practice. We have known men of genial ways command a good practice, though of mediocre ability. We have seen fine operators whose success has been moderate from a lack of personal magnetism and gruffness of manner.—From Dental Gazette.

HOW TO CROWN AN INCISOR ROOT OUTSTANDING FROM NORMAL ALIGNMENT.

JOHN GIRDWOOD.

Mrs. W. came to have some lower teeth crowned. She was wearing an upper plate bearing right central and left lateral incisor and canine. The right central root was badly abscessed, and little more than half covered by the artificial tooth. To conceal the root by means of a tooth on the plate was impossible, and I determined to crown it as follows: The root was ground away well below the margin of the gum, except on the lingual surface, and the enlarged canal undercut to receive pink baseplate gutta-percha packed to force the gum away. This, repeated several times, permitted more to be ground off the root. A platinum band was fitted, capped, and a pin soldered with pure gold; cap, band, and pin being made as for a Richmond crown. The pin above the cap was ground off short; a tooth was selected, backed with platinum, and fitted to the cap in a line with the other teeth. The tooth was raised a little clear of the platinum cap, so as to allow body to be fused around and under it. The tooth was soldered on the lingual surface with pure gold, and the backing and pins flowed up and contoured as far

as the very close bite would allow. Gum body of color to match the gum was flowed on the front part of the cap, and a little over the edge of the band in front. Porcelain was not used on the lingual surface, as, on account of the closeness of the bite, the coating would have been too thin to have afforded strength. The result, which was pleasing to the eye, could not have been attained on a plate, as the thin facing of gum body would inevitably have been fractured by the movement of the plate in the mouth, or by an accident in handling on the part of the patient.—Extract Dental Cosmos.

ROOT-FILLING.

G. J. INGRAMCOTTON.

Take a piece of aluminum, the same as that used for plates, and from this cut a strip and swage it out thin at one end, then cut a very fine and narrow strip the shape of the canal (making a hook at the upper end). This I taper off to a fine point with a file. The filling is completed by pumping chloro-percha into the canal and forcing the aluminum point into this. These points take to any bend in the root, and seldom, if ever, give any trouble. But by this I do by no means say that my idea is superior to that of Dr. Van Beust, and would be glad to see what others think of the aluminum points.—Dental Brief.

BAD EFFECTS OF PREMATURE EXTRACTION OF THE DECID UOUS TEETH.

C. B. BLACKMARR.

A case recently came into my hands for treatment that illustrates this in a forcible manner. In the upper jaw the permanent incisors, the permanent molars and the permanent first bicuspids are erupted and in the arch. The second temporary molars are the only deciduous teeth left in the arch and they occupy their proper positions. The temporary cuspids had been extracted, and the arch has contracted until it is closed, leaving

no spaces for the permanent cuspids, which have not vet erupted but which can be distinctly seen appearing out of the line of occlusion and high up in the jaw under the lip. This condition was caused by the extraction of the temporary cuspids when the child was but eight years old, in order that the permanent lateral incisors might have room to get into the arch in proper alignment. The result was the contraction of the bones of the jaw and the closure of the arch, because the permanent cuspids had not sufficiently formed to come down into the space. As a natural consequence the jaw at that point has not developed sufficiently to admit the cuspids, which are detained in the jaw where developed. The dentist who extracted the cuspids tried to subvert nature's process by attempting to hold the space between the lateral and first bicuspid with a splint, but of course it could not be done. The contraction of the upper arch also produced contraction of the lower, and for some unwise reason the lower temporary molars have all been extracted, producing a recession of the permanent incisors and narrowing of the arch.

I have selected this case because it shows a not uncommon condition, a condition which should never occur at the hands of a dentist. It might happen from the care of some physicians who extract to relieve pain in children's teeth.—Dental Register.

PRACTICAL SUGGESTIONS IN MINOR SURGERY. H. D. HATCH.

First, the treatment of badly torn flaps of gum, occurring during extracting. We have seen the whole tuberosity of the maxilla, including the wall of the antrum, torn away with the third molar imbedded in it. Such an accident may easily happen to any dentist operating on an aged patient, when the antral wall is thin, for there is a progressive thinning of all the sinuses as age advances.

A similar accident has happened to me several times, except that when the fracture of the tuberosity was felt the operation was stopped short and with the Parmly-Brown or other strong chisel the tooth was pried out of the loose piece of bone, the bone being held by the fingers as best it might. The tooth

once free, the fragment was replaced and stitched to the adjoining tissue, using for the purpose the smallest curved needles. Such pieces tend to unite very quickly, an antiseptic wash being used in the meantime. In this way all large pieces of gum accidentally torn while extracting are not cut off, leaving the process bare, but are stitched in place or otherwise retained.

Another call for minor surgery is in case of obstinate nerve pain after extracting. If the pain is severe and continuous, resisting the action of anodynes or antiseptics, it is presumably caused by the pinching of nerve filaments in the bone surrounding the socket; at least, such a diagnosis has seemed to be verified in several cases in practice, where the pain ceased at once and forever upon cutting the bone at the apex of the socket with a sharp, round, rapid-running bur.

In doing this operation we are of course to bear in mind the antrum on the one hand and the inferior dental vessels on the other, although if the antrum be perforated with a clean, sharp instrument under the usual antiseptic precautions no harm will follow.—Dental Cosmos.

TREATMENT OF ROOT-CANALS.

C. L. HUNGERFORD.

The filling of a canal is the simplest matter in the world, but the cleaning out of these canals takes a long time. You have got to devise instruments and ways and means to clear them out so that you can fill them. If you expect you can send some little prepared broach down in those canals and clear them out, you are mistaken. Very few of the variety of instruments go down in those canals at all, but you can cut them, and get them reamed out by the instruments made by our manufacturers until they are large enough to take in any kind of root-filling you desire to place, gutta-percha being preferable. The shrinkage of gutta-percha is not the one-thousandth per cent, the cause of failures as much as the lack of space for the filling to reach. In the case of a canal that is filled one-half or two-thirds full. you might have a shrinkage of the gutta-percha. A canal stopped at the end, and water-tight, air-tight, and serum-tight, there will be no appreciable shrinkage of those solid guttapercha points softened enough with chloroform to allow them to slip to the apical portion. If you should fill them with liquid gutta-percha, then there would be considerable shrinkage. Have your canals rounded out or made oval, so that when the guttapercha point slips down there it is full, and there is no free chloroform to speak of. There will not be the one-hundredth of one per cent. of free chloroform. I would insist, if I had anything in the world to add that would impress you, that rootcanals must be cleared out and enlarged before you attempt to fill them; that before you attempt to crown teeth, you must so cone them to the lowest point that the harder you drive your band on the tighter it hugs them. Do not attempt to go just a little under the edge of the gum, but go well under the edge of the gum. I do not always succeed in getting these teeth properly coned. I do not always fill root-canals, but I do fill such a large per cent. it will overbalance amazingly the results of those who do not attempt it. I am positive of that.—Extract IV estern Dental Journal

USES OF THE TUBE POST. JOHN GIRDWOOD.

Tube-posts, instead of solid ones, are often of great advantage in certain cases of crown and bridge-work in economizing time and enabling the operator to proceed with the more permanent structural part of his work while the tiresome routine of root-treatment is in progress. When a root which is the seat of chronic abscess has to be crowned or utilized as a bridge abutment, and does not yield to treatment within a reasonable time, there is something to be said for subjecting it to a period of probation before finally and permanently sealing its apex. If such a probationary period is deemed necessary, the patient must obviously be without the appliance (crown or bridge) until the dentist considers he may safely proceed with its construction. To many patients this delay is irksome, and is particularly trying to those who may have come from a distance to have their work done, and who must have it done within a limited time owing to social or business calls, but who at a subsequent date could spare time for thorough treatment. From their point of view, as well as from the dentist's, any plan which will shorten treatment is of the utmost moment. The employment of tube-posts in such cases I have found to be an excellent time-saver.

The making of the tubes requires no detailed description, and they are used in all respects exactly like solid posts. Two points should, however, be carefully noted: The one that the joint of the tube should be soldered along its whole length, as this is essential to procuring the maximum strength and rigidity from the hollow cylinder; the other that when once the tube has been so soldered its lumen should be filled with some substance which will prevent its being soldered up in the subsequent steps of crown and bridge-making. For this latter purpose a splinter of orangewood dipped in asbestos and plaster paste and driven into the tube is probably the most efficient, but a spiral of stiff paper wound between the finger and the thumb and dipped in chalk and water, or a few strands of thread used in the same way, are equally good. These substances "cinder" under heat, and prevent blockage of the tube by solder; and when the work is finished and ready for the mouth they are easily washed out, leaving the interior of the tube clear. The strength of these tubes is, for all practical purposes, equal to solid pins, and they permit of the continuing of root-treatment after the crown or bridge has been set in the mouth, either permanently or temporarily, as seems best to the operator.

When any extra strain has to be borne, I have sometimes reinforced the coronal end of the tube by soldering a very thin section of tube about one-eighth of an inch long to the outside of the tube-post; but I have not been compelled to adopt this means of additional strength by any breakage or failure of the tube-post.

To prevent the apex of the canals being accidently sealed by cement or gutta-percha, a small pellet of cotton dipped in an essential oil is placed over the apical foramen; the interior of the tube-post is lubricated similarly with oil. Any excess of cement or gutta-percha is thus readily withdrawn while it is still soft by a roughtened broach or bristle, and the tube is finally cleared of all fragments and the apex left open by the removal, through

the former, of the cotton peliet. When the root has been dressed to a healthy condition, it is sealed and filled in the ordinary way.

From the above it will be evident that the principle of root intubation in crown and bridge work brings within immediate and complete treatment (as far as the mechanical part of the work is concerned) cases which formerly could not be dealt with, much less finished, except under the most favorable conditions of professional attendance.—Dental Cosmos.

CORRESPONDENCE.

NON-COHESIVE GOLD AS A FILLING MATERIAL

Editor Ohio Dental Journal:

I send herewith some correspondence which I believe contains matters of interest to the profession. If you think best to publish the letters, you are at liberty to do so.

G. S. JUNKERMAN.

CINCINNATI, Ohio, Sept. 13, 1901.

Dr. J. Foster Flagg, Swarthmore, Pa.

My DEAR DOCTOR-Your favor of the 4th inst,, in reference to the clinic on contour fillings with soft foil, at the New Jersey State Dental Society meeting, has been received. You may be assured that I was not only very much surprised, but also much encouraged at receiving a communication of encouragement from a man as high up in the profession as yourself. I received my first inspiration in the manipulation of soft foil from one whom you no doubt knew while he lived, old Dr. James Taylor, of our city. I did not carry the experimentation and consideration of the subject very far until I had been in practice about five or six years. I then began to realize that we dentists were short on not only our painless, but short operations. I had always practiced the method of starting fillings with soft foil. I do not say it for the purpose of boast, and I trust and pray that you will not consider it in that light, but since you have asked me to express myself concerning it, I trust that what I say will be received as a true portrayal of my feelings and position in the matter. I have carried the use of soft foil further than any man that I have ever seen operate, or any operations of which I have read in journals, or heard described in dental societies. There are several

features which I make in my manipulation of the material that I have never seen suggested by any one clse. I use the same instruments that I do for cohesive foil, and I am an advocate of small instruments and straight ones. I have reached a point where I can build up cutting edges of incisors; I can contour molars of all kinds, likewise bicuspids and can do as perfectly as cohesive foil workers can with their material. A year ago I was at the Kentucky State Dental Society meeting, and was there challenged on the floor before the entire convention to put in a contour filling of Abbey's soft foil. I can assure you that I caused a considerable amount of excitement, and after it was all over, my challengers and the remaining advocates of cohesive foil, freely and publicly acknowledged that I had done everything that I had promised. They prepared the contour cavity themselves, likewise the gold. I had never before used any of Abbey's foil, and inside of five minutes I had inserted a large contour filling in a molar tooth.

Two years ago I wrote a paper on the subject of soft foil, which appeared in "Dental Digest." Last winter I gave a clinic at the Ohio State Dental Society meeting, but it was neglected and ignored. Last winter I came near being mobbed and run out of my position here in the college with which I am connected, on account of my strong advocation of the principles of soft foil, It does seem strange to me that after making inquiries among the colleges and investigation on my own part, I find the greatest amount of ignorance displayed on the part of teachers in the most valuable qualities that gold possesses. Either the teachers are too lazy or they do not want to know how to teach the manipulation of soft foil. One of the teachers of a prominent dental school acknowledged to me that he understood the principles and thought them to be perfectly correct, but that they are very much more difficult to teach to students, and used this as an excuse for not promulgating such principles. I regret exceedingly not to be able to come in personal contact with you, for, while I feel a certain amount of confidence in my ability in this line of work, I am always glad to learn something, and I know there is great room for improvement. I instruct my students here at the college in the principles above portrayed, and I trust that some day these principles will take root and grow to some good. I remember that your name was the first one that I heard when I started the study of dentistry, twenty years ago, and I recall the statement made to me many a time, "in proportion as teeth need saving, gold is the worst filling material to use". I would like to change this this now and say, "that in proportion as teeth need saving, cohesive foil is the worst material to use," but add to it also, "that in proportion as teeth need saving, soft foil is the best material known to the dental profession." There is no material from my point of view that any dentist can use any better than I can use soft foil. I can use it in the softest tooth, as well as in the hardest, and it seems to me as I have heard my students say many a time, that I manipulate it as they do plaster paris in a bowl. Whether I have any special ability or talent in that line, I leave my students to say, but that I know the virtues of the principles that I advocate, I will allow no one to dispute. I want to thank you again for your very kind consideration in sending me that letter, which letter I would most certainly have had published in the catalogue of our

institution had I received it earlier. I certainly feel very proud of it. I was not able to get to the New Jersey meeting, and that society published my name without my authority, on its program, on the supposition that I might possibly go. I will endeavor to redeem my promise, partly made, at some future day, when I will be able to show New Jersey dentists what we know in Cincinnati.

With kindest regards, I am,

Most sincerely yours,

G. S. JUNKERMAN.

Swarthmore, Pa., Sept. 16, 1901.

G. S. Junkerman, M. D., D. D. S.

My Dear Doctor—Your letter of Sept. 13th has broken into my resolves of the past three months, for it seems to my old eyes like a little glint of sunshine through the, to me, dark clouds of dental "progress." You say you have reached the point where you can build up the cutting edges of incisors. That is just what I did for part of my graduating work in the spring of 1856. I put a face on the first bicuspid—left upper—a cusp on the cuspid and contoured the mesial face and edge of the lateral and the distal face and edge of the central. I do not remember whether it was J. D. White or Elisha Townsend who looked at the work, but I do remember that it merely caused the remark, "There is no discount on that work," and that I was satisfied. It was Thomas W. Evans who first, to my knowledge, indulged in artistic "contouring" with soft foil. My father was an excellent gold filler and indulged in quite extensive "building up," but his fillings were of the massive kind, without anatomical shape, but so formed as to restore contour sufficiently for the purpose of mastication and for the prevention of gum wounding from separations. And this was my carliest education in soft foil work.

I knew Thomas W. Evans from 1842 when he worked in the refining and plate making establishment of his uncle Warner, and during his student days with Prof. J. D. White and at the Jefferson Medical College, and it was after his leaving Philadelphia and going to practice in Lancaster (I think) in the center of Pennsylvania, that for a time I lost touch with him. It was about '45 or '46-as I remember-that one afternoon as I was walking up Arch street, Philadelphia, I met Dr. Evans walking down. Of course we had a cordial meeting and were talking over "old times" and his intention of going to Europe for "a year or two" to walk the hospitals, when he suddenly said, "By the way, I have something to show you," and took several teeth-molars, bicuspids and incisors-from his vest pocket, with large and very beautiful gold fillings in them, artistically shaped as to crowns, cusps and edges and elegantly polished. I never had seen anything to compare with such work and asked him if he had held the teeth in a vise to do the work. He replied, "Not at all. I did it in the mouth!" I exclaimed, "Then what did you extract them for?" To which he replied, "The patients came to me to have the teeth extracted and I told them I should charge 50 cents for extracting, but if they would let me fill them first I would extract them for nothing!" for he said he wanted them to show what he could do. I then told him I was both surprised and delighted and wished him to go up to my father's office to show the work to him. They were very well acquainted and my father was delighted. Among the fillings was one -a ring-completely encircling a lone incisor which Dr. Evans told my father he filled by "roping" the gold, winding it around the tooth and then condensing it. 'This so attracted my father's attention that he said, "Dr. Evans, you will go to Paris, of course, and Dr. Brewster is the court dentist to Louis Philippe. He is my cousin and I think he ought to see this work. I will give you a letter to him and it may be well for both of you." The letter was given. Dr. Brewster was, naturally, impressed, and the offer was made which eventuated in Dr. Evans' extraordinary career. As the result of this initiative, fine contour work was done by quite a number of the best gold workers and it was because of the fact that my very dear friend, Prof. Robert Arthur, did not possess the finger skill to do this, that he inaugurated the "piece to piece" work of cohesive foil. Great was the turmoil between the soft gold men and the piece to piece men during the later '50's and the carly '60's, but it was just at this time that gutta percha as "Hill's Stopping" and amalgam as "Townsend's Alloy" (so called) were beginning their work in saving the very soft teeth that had proved too much for even the best of the gold fillers. There seemed to be a something in the claims that were made for these materials, and a sufficient number of "wonderful results" in teach that were "mere shells," as they were called, that had then been filled tor 15 or 20 years, had been noted by a sufficient number of the "respectable" men for several of them to urge me to make a life work of the settling of the value of such work. It was my own ability as a gold worker that enabled me to throw "hot shot" in turn for the "hot shot" thrown by the gold men in the words "lazy," "shiftless," "incompetent," etc., for I offered in the various societies to fill with gold against any of them, and was never taken

Your mention of my friend, Dr. James Taylor, not only reminded me of him, but of the many pleasant meetings we had during the '60's.

You speak of your "quick filling" of "inside of five minutes." The story of my quick filling—inside of three minutes—at Cincinnati—I have forgotten how long ago—may interest you.

A number of speakers had told of their work and of the *length of time* needed for such results, when a member, sitting *next to me*, got up and expressed his surprise at the *length of time* given for the making of fillings, saying that he had many fillings of gold that had already done many years of service, which he had introduced in 15 minutes each. There was an audible groan from the members, and no sooner had the gentleman sat down than member after member thoroughly scored the *unfortunate* for the "wretched" "miserable" work he must have done. At last he leaned over to me, and in sad tones said: "I wish I hadn't said anything." "Why?" I replied, "wasn't what you said true?" "Indeed it was," he said, "but I am new here, and I suppose all this will be reported, and I don't think

it will do me any good." I said: "Well, I'll take it off from you—for I am old here and they can't hurt me!"

So, at the first chance, I remarked that enough time had been given to what I thought a very proper and very moderate estimate of the time in which a usual gold filling could be introduced, and I had only pity for the gentlemen who had so harshly criticised it, for I could easily introduce such a filling in three minutes!" Then there was nothing in the air but hisses; But I said that the hissers must be the "greenies" that were present, for the "old stagers" knew that I didn't mind hissers. So, in the afternoon-at Clinic-when I arrived, I found on the blackboard: "Quick Clinic—Dr. Flagg will introduce a gold filling in three minutes"—and you can imagine the broad smile on the faces of 70 members! I asked who had a cavity in the articulating face of a molar that would like me to fill it. Dr. C. S. Stockton, of Newark, N. J., said he had one all prepared for filling before he had left home, but there was not time enough to fill it with anything but cotton sandarac—and he referred to the time with his peculiar twinkle, for we were great friends. I removed the cotton, saw it was just the kind of cavity for quick work, pelleted the gold, selected the pluggers and burnishers, and napkined the mouth. I then told the crowd to stand back and keep back, and two gentlemen with their stop watches prepared to take the time. I dried the cavity, and then taking the first pellet in the pliers, I said, "Time."

Then the introducing and condensing went on, the burnishing followed, and I said "Time!"—both gentlemen called "2.57," and the members clapped and cheered and laughed, and Prof. Wetherbee, of "Bawston," leaned over me from his great height and asked, "How long do you suppose it will last?" "Till you are dead and rotten in your grave!" I replied, for he was not young then.

After examiation of the filling, and its "passing muster," I told the members that I also thought it a good filling, for I intended introducing such an one, but I wished them to understand that I had spent extra time on the work, and that I had given it an extra fine finish, for I could have introduced just as practically good a filling in much less time! That filling has been periodically "examined" ever since, and is yet doing service, but Prof. Wetherbee isn't dead yet!

My wife has a gold filling in the articulating face of a right lower bicuspid that I introduced in 1.15 37 years ago. So I knew at Cincinnati, what was possible. During the past 50 years I have had a number of just such funny performances at our dental meetings, and there are always enough present who sustain me by seeing the discomfited expression of the "sore-heads" who are always in evidence, and who have succeeded in so making dentistry "progress" backwards, until, as I know it, it is far behind what it was 30 years ago. This, my dear Doctor, may seem to be one of my "usually exaggerated" statements (as they are called), but, as they always are, it is strictly true. Familiar as I am with the principles and practice of "dentistry," I do not recognize any advance in either the work of making and adapting artificial substitutes, or in that of treating, filling and saving the natural teeth, and as for the output of the colleges, so far

as my personal examination of the *best* of the graduates from several of the most prominent schools is testimony, it gives me the opinion I hold: The teachings of Kirk's Collection of Articles, called the "American Text Book of Operative Dentistry" are far behind what *many practiced* 20 years ago, and some of its articles are relics of dentistry's dark ages!

"Extention for prevention" and "an hour for the filling of a simple

cavity," seems to be "about the size of it!"

With kind regards.

Truly yours,

J. FOSTER FLAGG.

SOCIETY.

NORTHERN ILLINOIS DENTAL SOCIETY.

At the annual meeting at Joliet, Oct. 16-17, 1901, the following officers were elected for the ensuing year:

Dr. C. J. Sowle, Rockford, president.

Dr. J. E. Hancock, Joliet, vice-president.

Dr. J. J. Reed, Rockford, secretary.

Dr. M. R. Harned, Rockford, treasurer.

Dr. C. J. Underwood, Elgin, member executive committee. Meeting to be held at Rockford in 1902.

J. J. REED, Secy.

OUR AFTERMATH.

PERSONAL AND MISCELLANY.

A SATISFACTORY PRESCRIPTION.—If this is as startling to you, Mr. Editor, as to me, perhaps you can use it in the DENTAL JOURNAL: A physician, by the name of Snyder, practicing in this State, and a graduate of an Ohio college, has recently prescribed as treatment for a case of chronic stomach trouble, a set of false teeth. The patient had the prescription filled. Does it look like the millennium were coming?—M. T., D. D. S., Toronto, O.

Lost Two Teeth and Suicided.—A French girl, living in London, has lately committed suicide because she lost her two front teeth and was unable

to raise the capital to purchase new ones. "I am no longer pretty," she is reported to have said in the letter she left behind, "so of what good am I in the world—therefore adieu." Cause and effect seem somewhat disproportionate to the mere male mind!—Dental Record.

MALPRACTICE SUIT.—In a suit for damages against a dentist in Melbourne, Australia, for extracting eleven teeth under an anaesthetic which the patient did not agree to have done, the patient, an aged servant, placed the value of each tooth extracted, although some of them were defective, at \$45.00. The court, in view of some doubt as to whether consent was given, valued each tooth at \$10.00. Consequently, the dentist had to pay \$110.00 and the costs of the court.

Tooth Sixteen Inches in Length.—Relics of prehistoric times have been unearthed in a bog at what is known as White Sulphur Springs, two miles north of Afton, I. T., by Professor W. H. Holmes, head of the bureau of ethnology of the Smithsonian Institution in Washington, and W. A. Gill, a government photographer. The find includes several large teeth and bones, together with many arrow points and heads. One tooth, that of a mastodon, measured sixteen inches in length and four inches across the top. This is said to be the largest tooth of these extinct animals ever seen by man. The rest of the collection, which is made up of three large boxes of relics, contains smaller teeth, both of the mastodon and the mammoth.

A QUESTIONABLE PRACTICE.—In the *Dental World*, October issue, page 7, Dr. Noel is reported as saying: "We should use the utmost caution to prevent the faulty development of the enamel organs. Prophylaxis should be practiced. Wiping out the infant's mouth regularly with Borolyptol, Resinol, Sanitol, and others. Cotton saturated with these remedies and used regularly will go far to prevent these unhealthly conditions."

We wonder if the Doctor ever tried a mouthful of "Resinol!" It may be effective as an external application for eczema, but we should draw the line on having our children use it in the mouth as a prophylactic.

ONE OF THE OLDEN TIME.—Dr. J. H. Coyle gives an interesting account of the kind of dentist who filled a tooth for him. His outfit usually consisted of a set of large octagonal handled pluggers, made of ivory, often with gold ferrules, steel excavators and files, with a mirror in a carved frame of pearl, studded with diamonds and rubies, all contained in a highly polished rosewood case. In fact, the patients were expected to be impressed as much with the display of his outfit, as with the skill and ability of the operator, just as it is often the case in this day, only it is the operator (?) instead of the case. While it was not universally the custom, a large number of these old practitioners still further awed their patients into silence and obedience by operating in a large flowing robe, highly colored and figured, secured by a cord and tassels in which were woven strands of gold, around his body.—Brit. Journal.

DIED.—T. A. Long, the well-known and genial representative of the S. S. White Co., Philadelphia, died in that city on Nov. 5th.







